

# Regional Technology Planning Teams (RTPT) Toolkit



DEVELOPED FOR THE MISSOURI BROADBAND PLANNING INITIATIVE





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Economic development

Energy and the Environment

Healthcare

Higher education institutions (including vo-tech)

Libraries

Local broadband and internet service providers (public/private partnerships)

Local government

Police department, public safety and emergency services

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Tourism

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# SECTION 1

## Mission and Goals

**REGIONAL PLANNING TEAM INTRODUCTION AND MISSION  
STRUCTURE AND RESOURCES OVERVIEW  
BROADBAND PLANNING PROCESS**

# NOTES

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**Missouri Broadband RTPT Planning Initiative**

# Introduction and Mission

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## Missouri Broadband RTPT Planning Initiative

The State of Missouri is in the midst of a transformative effort to expand the reach of affordable, high speed internet access to 95% of Missourians within five years. This effort involves working to enhance broadband access, create public computing centers, develop sustainable broadband adoption efforts, document broadband availability through comprehensive statewide mapping and enhance strategic planning activities throughout the State, to ensure that expanded broadband infrastructure and services will be available to meet the growing needs of citizens, businesses, non-profit organizations and public institutions.

A critical part of this comprehensive effort is local and regional broadband planning. In line with this, the State has developed 19 **regional technology planning teams (RTPTs)**. These 19 RTPTs have the same overall mission: *to advance broadband demand and adoption, and broadband service and infrastructure availability, within their region.*

Each RTPT will pursue this mission through a twofold process:

- conduct a Broadband Needs Assessment and, based on the assessment's findings and the related activities of the RTPT
- develop a Broadband Strategic Plan for their region.

The culmination of this effort will be diverse community sectors, such as education, business, healthcare, government and local broadband and internet service providers, working together to implement the strategic initiatives and directions detailed in the plan to advance the broadband climate in their region. The Strategic Plan will include measurable goals, objectives and benchmarks that will help keep the effort on track in ensuing years.

The work of the RTPTs initially occurs over a period of about 18 months, but the process is designed to be enduring, such that the needs assessment can be updated over time and the Strategic Plan can remain dynamic and be adjusted and updated based on changing circumstances, technologies and the results of implementation efforts.

The history of broadband planning has shown that it has significant, positive results for localities, regions and the State as a whole. For example:

- Planning related to business, industry and economic development has advanced infrastructure within rural, urban and suburban areas that has enabled entrepreneurial businesses to flourish and economic development to grow in areas previously incapable of supporting such investment.
- Planning involving the healthcare sector has resulted in advanced infrastructure to help provide critical telemedicine applications to residents of rural communities, enabling more uniform healthcare services statewide.
- Planning within the educational sector has brought high-speed communications to remote schools and school districts and, through various distance learning applications, has provided previously unavailable courses and curricula to students at these institutions.

These are just three of many examples that touch on each sector represented within the RTPT. As one sector utilizes the benefits of broadband, it creates a ripple effect impacting other sectors and the region as a whole.

This effort, and your involvement in it, is critically important to the future of your region, the State of Missouri and the country as a whole. **As such, you are a critical part of the *MoBroadbandNow* effort, and we thank you for your participation!**



# Structure and Resources Overview

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## Missouri Broadband RTPT Planning Initiative

The Regional Technology Planning Team (RTPT) works to meet the following mission: *to advance broadband demand and adoption, and broadband service and infrastructure availability, within their region.*

The first task of the RTPT is to ensure that the membership of the planning team is developed to represent local stakeholders in the development of broadband. RTPT members are drawn from a variety of different sectors.

Below is a typical list in alphabetical order. Each region, however, is free to add to this list based on the character of their individual regions:

Agriculture

Economic development

Small business, industry, manufacturing, professionals, service sector, retail, workforce development

Energy and the Environment

Healthcare

Higher education institutions (including vo-tech)

Libraries

Local broadband and internet service providers (public/private partnerships)

Local government

Police department, public safety and emergency services

Public schools (including vo-tech)

Tourism

As other key individuals, businesses and organizations are identified that would contribute to the planning work of the RTPT, their special expertise can be added to the team.

The RTPTs will have many resources available to them to perform their work, including:

- The contents of this Broadband Planning Tool Kit, which are further detailed below.
- A comprehensive broadband map and availability information from the State's *MoBroadbandNow* website: <http://transform.mo.gov.broadband>.
- Facilitators from the State and its consultants to work with and help guide each RTPT through the planning process, including performance of the needs assessment and development of the broadband strategic plan.
- Communications and links to the other RTPTs around the State to share thoughts, ideas, challenges and opportunities.
- Support from the staff of the RPC and MACOG.
- Links to planning resources, research and other materials from throughout the State and around the country where similar initiatives are underway.

Regarding this Tool Kit, in ensuing sections you will find a host of helpful materials, including:

- **A Tutorial on “Broadband 101”** -- To provide a basic foundation for understanding broadband, it is important that RTPT members all have a common understanding of what the term “broadband” means. This document will step you through the various attributes, characteristics and elements of the term “broadband” and provide a solid understanding of key words being used by the industry and what needs to be assessed and planned. You'll also find a document that helps explain why broadband speed matters to Missourians.
- **Sector Descriptions** -- These documents provide an overview of how broadband planning impacts each of the sectors identified above, including current examples across the State.
- **The RTPT Processes** -- These documents walk through the entire planning process from the kick-off meeting to the development and implementation of the strategic plan, including identification of milestones along the way.

- **Surveys --** This set of documents provides templates for a written residential survey and online business and organizational surveys.
  
- **“How-To” Discussions on:**
  - Survey development and distribution practices.
  - Performance of focused discussions with a variety of different types of groups.
  - Performance of a Strengths, Weaknesses, Opportunities and Challenges (SWOC) Analysis, specifically as it relates to broadband.
  - The role of the Missouri speed test site.
  
- **Sample Press Releases --** This section includes sample announcements related to RTPT implementation, announcement of the Needs Assessment findings, and the announcement of the completion of the Strategic Plan.
  
- **Broadband Strategic Planning Purpose and Process --** This document provides examples of the various component parts of a Broadband Strategic Plan.
  
- **Other Resource Documents --** Included here are a variety of documents and links to materials including:
  - Broadband planning sites in other states
  - Links to federal broadband related documents
  - Pertinent census data
  - Broadband adoption studies recently completed
  - Broadband-related information from throughout Missouri and the rest of the country

# The Broadband Planning Process

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## Missouri Broadband RTPT Planning Initiative

The Regional Technology Planning Team (RTPT) is devoted to a four-step process that leads to the development and implementation of a localized strategic plan for the advancement of broadband infrastructure and services within the region.

### **Step 1: Understanding the current status and goals of broadband in the region**

During the initial meeting, the RTPT will review the overall goals of the State's broadband efforts, the current status and goals of broadband availability and adoption within the region and the RTPT's role in meeting State and regional broadband goals. Additionally, the RTPT will develop a plan to add to the assessments of the current status of broadband in their regions and most specifically in the local sector each team member represents.

The State is working to provide three important tools to the RTPTs in their planning:

- a comprehensive and searchable map of broadband availability;
- a scientifically random study of residential adoption of broadband and the barriers to adoption;
- a study of local businesses and the level of adoption and projected business needs associated with broadband.

Members of the RTPTs will also assess and discuss the current projects underway in their region through federal stimulus grants. These critical public/private partnerships are responding to expressed needs in the State and provide a host of opportunities for further growth.

RTPT members will be given an assignment to collect information about broadband needs from the sectors they represent and share it with the RTPT in advance of the second full RTPT meeting. Many of the members have broadband-related initiatives underway as part of their own goals. For example, federal funding is working to connect healthcare facilities in rural Missouri. Healthcare members of the RTPTs will want to share where they are with these projects and what future needs they anticipate having. RTPT members will be provided tools and resources to gather information from their sectors about broadband.

## **Step 2: Sharing the findings of the broadband assessment and identifying strengths, weaknesses, opportunities and challenges**

Members of the RTPT will share the results of their data collection efforts and identify the common challenges related to broadband availability and adoption in their regions.

Once the status and challenges for moving broadband forward are identified, the RTPT will craft a series of goals and opportunities that can be facilitated by broadband. The local broadband providers are especially critical to the process at this stage as they assist with brainstorming as to how each region can address the challenges and meet the State of Missouri's transformative goal of providing 95% of residents and businesses with broadband availability.

The RTPT will then craft a written summary of the following:

- the current status of broadband
- Residential and business surveys
- Key sector findings
- the challenges in moving forward
- the goals of the region

As each goal is considered, measurable objectives that move the region forward to meeting the goal are outlined, discussed and vetted.

A projected timeline for meeting the goals established in the broadband strategic plan is developed.

### **Step 3: Sharing the draft broadband planning document**

At this point, RTPTs should consider calling a regional “town meeting” on the topic and sharing with residents the key findings of the residential study and sector reports on broadband adoption/use, the goals the RTPT has identified for the region and their draft concepts as to how to meet those goals.

Members return to their sectors to share the RTPT’s draft strategic plan and how the objectives will impact each of the sectors. The “doableness” of the project is then considered. RTPT members can determine goals they must achieve to be successful and then additionally have goals that would be a stretch for the community, but would be a great asset to the region if achieved.

### **Step 4: Finalizing the plan, establishing metrics for measuring success and sharing the plan with the community**

Utilizing feedback on the draft plan, the members of the RTPT work to make revisions and amendments to the goals and objectives of the local strategic plan. As part of their work they design a series of metrics so that progress in meeting the goals articulated in the plan can be measured over the next five years. **This includes metrics for residential and business adoption of broadband.**

The members of the RTPT have completed their task of developing the plan. Now, though, in order to make sure that the plan is effectively monitored and revisited as it is implemented, they create a localized plan for monitoring.

The RTPT members share the final results of the RTPT’s work with the newly created Office of Broadband Planning and post it to their respective RPC’s websites.

## SECTION 2

# Background Materials

**BROADBAND 101**  
**WHY SPEED MATTERS IN MISSOURI**  
**THE ROLE OF MISSOURI SPEED TEST SITE**  
**HOW BROADBAND IMPACTS REGIONAL SECTORS**

# NOTES

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**Missouri Broadband RTPT Planning Initiative**





# Broadband 101

## WHAT IS BROADBAND?

The definition of broadband, or high-speed Internet access, is constantly changing and being challenged. The term is typically used to describe Internet service that is faster than traditional dial-up Internet access. The National Telecommunications and Information Administration currently defines broadband as speeds that move data at a rate of 768 Kilobits per second (Kbps) downstream and 200 Kbps upstream.

## HOW IS BROADBAND DIFFERENT FROM DIAL-UP SERVICE?

- Provides higher-speed of data transmission -- more content can fit in the “pipeline”
- Provides access to the highest quality Internet services— video, streaming media, VoIP (Internet phone), online business applications and interactive services
- Broadband is always on -- does not block phone lines, no need to reconnect to the network
- Less delay when downloading or sending files

## HOW WILL THIS IMPACT THE DAY-TO-DAY LIVES OF MISSOURIANS?

Capacity, choice and speed are some of the obvious benefits of expanded broadband. What may not be as obvious is the potential that comes about when technology opens the door to opportunity. While rural America has often struggled to gain access to the highest level of education, healthcare, retail and other services, the ability to connect people and ideas at the speed of light changes everything. Other benefits include:

- Economic Development- Broadband can provide access to regional, national and worldwide markets, enhancing the opportunities for current businesses, while providing the infrastructure to attract entrepreneurs, knowledge workers, and technology-based companies that would have not otherwise considered locating in particular areas of the state nor this region of the country.
- Education- All levels of the education continuum, including primary, secondary, post-secondary, home-schooling and continuing education programs, stand to gain incredible opportunities. High speed connectivity offers the promise of remote class instruction, shared course offerings and teachers and administrators networking with peers. Broadband can overcome geographical and financial barriers to provide access to a wide range of educational and cultural opportunities.
- Healthcare- Telemedicine and telehealth have the potential to revolutionize health care in rural America by allowing rural providers and patients the opportunity of access to specialists, retrieval of health records, improved emergency response, reduced transportation costs, the offering of new alternatives for home health and e-visits and connecting health professionals to their patients in real time -- facilitating provisions of the highest quality of medical care to currently unserved and underserved populations.

The availability of an expansive and affordable broadband network will also improve many other aspects of our citizens' lives, such as in the areas of agriculture, public safety, government administration, real estate and land values, tourism and the overall quality of life of Missourians.



## BROADBAND TERMS TO KNOW

**Backbone-** The part of a communications network that acts like the central nervous system, a central hub from which all parts of the network extend.

**Broadband-** As defined by the National Telecommunications and Information Administration, broadband describes always-on, high-speed Internet access that moves data at a rate of at least 768 Kbps downstream and 200 Kbps upstream.

**BPL (Broadband over PowerLine)-** Delivery of broadband over the existing low- and medium-voltage electric power distribution network at speeds that are comparable to DSL and cable modem speeds. BPL is an emerging technology with significant potential -- power lines are installed virtually everywhere.

**Cable Modem-** Enables cable operators to provide broadband using the same coaxial cables that deliver pictures and sound to your TV set. Most are external devices with two connections: one to the cable wall outlet, the other to a computer. They provide transmission speeds of 1.5 Mbps or more.

**Community Anchor Institutions-** Schools, libraries, medical/healthcare providers, public safety institutions and other community support organizations and agencies that provide outreach, access, equipment and support services. They work to facilitate increased use of broadband service by underserved populations.

**Dial-up connection-** A data communications link that is established when the communication equipment dials a phone number and negotiates a connection with the equipment on the other end of the link. It provides the ability to dial-up the Internet, at speeds up to 56 Kilobits per second (Kbps), via a modem over standard telephone lines.

**DSL (Digital Subscriber Line)-** Wireline transmission technology that transmits data faster than dial-up over traditional copper telephone lines already installed to homes and businesses. DSL-based broadband provides transmission speeds ranging from several hundred Kbps to Mbps.

**Fiber Optic-** A technology that converts electrical signals carrying data to light and sends the light through transparent glass fibers about the diameter of a human hair. Fiber optic transmits data at speeds far exceeding current DSL or cable modem speeds, typically by tens or even hundreds of Mbps.

**Last mile-** Portion of network that provides broadband service to end users or end-user devices (including households, businesses, community anchor institutions, public safety entities, and critical community facilities).

**Middle mile-** Network infrastructure not delivering services to end users. May include interoffice transport, backhaul, internet connectivity, or special access.

**Satellite-** Another form of wireless broadband that is also useful for serving remote or sparsely populated areas. Speeds may be slower than DSL and cable modem, but can be about 10 times faster than the download speed available with dial-up Internet access.

**Served Area-** Service area where more than half of households meet minimum access and speed requirements and adoption/subscription rates exceed 40%.

**Underserved Area-** Service area, consisting of one or more contiguous census blocks, where half the households lack access to minimum broadband service, or an area where no land or mobile service offers broadband with at least 3 Mbps, or areas where less than 40% of households subscribe to any service.

**Unserved Area-** Service area, made up of one or more contiguous census blocks, where at least 90% of households lack access to facilities-based minimum broadband service, either fixed or mobile.

**Wireless-** Connects a home or business to the Internet using an over-the-air radio link between the customer's location and the service provider's facility. Wireless broadband can be mobile or fixed.

### TALKING SPEED IN BITS

*Bandwidth - Amount of data that can flow in a given amount of time.*

*Kbps - Kilobits or thousands of bits per second.*

*Mbps - Millions of bits per second.*

*Gbps - Billions of bits per second.*

### MOBROADBANDNOW INITIATIVE

<http://transform.mo.gov/broadband/>

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# Why Speed Matters in Missouri

## Missouri Broadband RTPT Planning Initiative

When residents and business representatives discuss broadband, or high-speed Internet, they often do so in relationship to applications. The following chart illustrates the relationship between broadband speed, the types of broadband providers who offer those speeds and the common applications each level of broadband can support.

Download Speeds	Upload Speeds	Type of Service	Typical Applications*
≥ 768 Kbps but <1.5 Mbps	≥ 200 Kbps but <768 Kbps	DSL Cable Modem Fiber Optics Satellite Cellular Fixed Wireless	<ul style="list-style-type: none"> <li>Basic Email</li> <li>Web Browsing</li> <li>You Tube Video</li> <li>Voice Over Internet Protocol (VOIP)</li> </ul>
≥ 1.5 Mbps but <3 Mbps	≥ 768 Kbps but <1.5 Mbps	DSL Cable Modem Fiber Optics Satellite Cellular Fixed Wireless	<ul style="list-style-type: none"> <li>Streaming Music</li> <li>Standard Definition (SD) Video</li> <li>Remote Surveillance</li> <li>Telecommuting</li> </ul>
≥ 3 Mbps but <6 Mbps	≥ 768 Kbps but <1.5 Mbps	DSL Cable Modem Fiber Optics Cellular Fixed Wireless	<ul style="list-style-type: none"> <li>File Sharing (small/medium)</li> <li>Enhanced Definition Digital Video</li> <li>Internet Protocol TV, IPTV-SD (1-3 channels)</li> </ul>
≥ 6 Mbps but <10 Mbps	≥ 1.5 Mbps but <3 Mbps	DSL Cable Modem Fiber Optics	<ul style="list-style-type: none"> <li>Gaming</li> <li>Video On-Demand</li> </ul>
≥ 10 Mbps but <25 Mbps	≥ 3 Mbps but <6 Mbps	DSL Cable Modem Fiber Optics	<ul style="list-style-type: none"> <li>Telemedicine</li> <li>Remote Education</li> <li>IPTV-High Definition (HD)</li> </ul>
≥ 25 Mbps but <50 Mbps	≥ 6 Mbps but <10 Mbps	Cable Modem Fiber Optics	<ul style="list-style-type: none"> <li>High Definition Video Surveillance</li> <li>Advanced remote access to applications</li> </ul>
≥50 Mbps but <100 Mbps	≥10 Mbps but <50 Mbps	Cable Modem Fiber Optics	<ul style="list-style-type: none"> <li>Video conferencing with multiple users</li> <li>Remote Supercomputing</li> </ul>
≥100 Mbps	≥ 100 Mbps	Fiber Optics	<ul style="list-style-type: none"> <li>Real-time data collection</li> <li>Real-time medical image consultation</li> <li>Remote Supercomputing</li> </ul>

\*Application examples from the California Broadband Task Force's Definition of Broadband chart for illustration purposes.

High-Speed Internet (or Broadband) Services provide many essential applications through the rapid transmission of voice, data, and video over a variety of platforms, including but not limited to DSL, Cable Modem, Fiber Optics, Fixed Wireless, Mobile Wireless and Satellite.

Broadband, or high-speed Internet, is described by the Federal Communications Commission (FCC) in a recent report and order as a benchmark of 4 megabits per second (Mbps) downstream and 1 Mbps upstream. This means that a person is experiencing broadband when they are able to download content at 4,000,000 data points per second and send 1,000,000 data points per second out from their computer. This description is currently the subject of much debate.

Another key measure of broadband for users is how quickly they can download content while online. This feature of broadband is based on how many *bits* of information can move per second. For example, Kbps, refers to “a thousand bits of information per second.” Mbps is much faster at a “million bits per second.” Faster broadband means less time waiting on a download to occur and opens up the possibility of more efficient use of time. Faster broadband also means new considerations of what you can accomplish online, creating an entrepreneurial environment for our future and one that could *Transform Missouri*.

<b>Speed Comparison Reference Table</b> <i>Approximate time it takes to perform specific downloads at various speeds</i>				
<b>Description</b>	<b>Digital Photo</b> 2 MB file	<b>Audio Track</b> 4 MB file	<b>30 Min TV Show</b> 240 MB file	<b>HD Movie</b> 1.5 GB file
less than or equal to 200 Kbps	2 min	4 min	6:15 hr	39 hr
greater than 200 Kbps and less than 768 Kbps	46 sec	1:33 min	2:20 hr	10 hr
greater than or equal to 768 Kbps and less than 1.5 Mbps	23 sec	46 sec	47 min	5 hr
greater than or equal to 1.5 Mbps and less than 3 Mbps	11 sec	23 sec	27 min	2:30 hr
greater than or equal to 3 Mbps and less than 6 Mbps	6 sec	15 sec	13 min	1:45 hr
greater than or equal to 6 Mbps and less than 10 Mbps	2 sec	4 sec	5 min	1 hr
greater than or equal to 10 Mbps and less than 25 Mbps	0.67 sec	1 sec	3 min	30 min
greater than or equal to 25 Mbps and less than 50 Mbps	0.67 sec	1 sec	1:10 min	7 min
greater than or equal to 50 Mbps and less than 100 Mbps	0.67 sec	0.67 sec	42 sec	4 min
greater than or equal to 100 Mbps and less than 1 Gbps	0.67 sec	0.67 sec	4 sec	1 min
greater than or equal to 1 Gbps	0.67 sec	0.67 sec	2 sec	20 sec
Unknown future speeds to be developed.				

# The Role of the Missouri Speed Test Site

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## Missouri Broadband RTPT Planning Initiative

The Missouri speed test site provides two valuable pieces of information that will be incorporated into the planning processes undertaken by the 19 RTPTs throughout the State. The first of these is to help identify where broadband is being utilized which will add to the dataset being compiled concerning where broadband is available in the State today and into the future. The other important information gathered is that of actual speeds experienced by residents of the State, which can then be compared to the providers' advertised speeds, as the planning processes move forward.

Broadband providers often advertise both downstream and upstream speeds as "up to" speeds. In other words, a provider will advertise speeds "up to" 4 Mbps in the downstream direction and "up to" 1 Mbps in the upstream direction. Consumers may believe that those are the speeds they will most often realize when utilizing the provider's network for internet access. However, in reality, the actual speeds offered on the network may be significantly less than the advertised "up to" speeds.

Many broadband networks deployed today utilize a shared bandwidth design whereby the network is developed based on customers sharing the total available bandwidth on the network. This is an effective way for a provider to offer fast speeds to large areas while minimizing the amount of infrastructure needed and thereby reducing the cost of deployment. In many cases this design provides speeds sufficient for most subscribers' needs that are well within the definition of broadband. However, the actual speeds will most often be lower than the advertised speeds because of the shared bandwidth design and in some cases they will fall below the threshold stipulated for broadband.

An example of this is, if a network has a total available bandwidth equating to a download speed of 10 Mbps and one person is accessing the network, they will realize speeds at or near 10 Mbps. However, if 10 people are accessing the same network at the same time, they will divide the available network bandwidth among them. Although the actual results will vary, based on the level of utilization of bandwidth by each of the users, for purposes of this example, the result would be approximately 1 Mbps available to each of the 10 people accessing the network. In this example we assume all 10 users are accessing significant amounts of bandwidth as may be required to download music, video and large files or that may be required to watch live video. In reality, all 10 users will likely be utilizing differing levels of bandwidth at any given time. This phenomenon makes it difficult to evaluate advertised speeds within a given system, between systems and throughout the State and beyond.

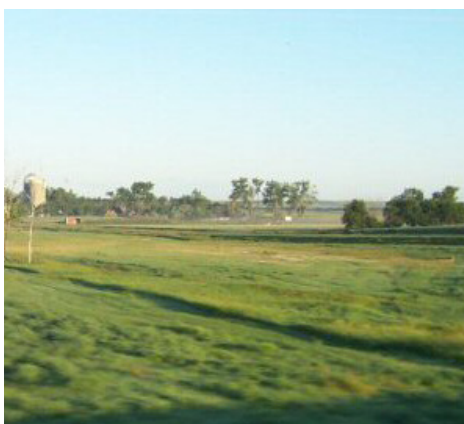
This is why performance of speed tests, such as those being performed by State residents on the State sponsored site, are so important. They allow a clearer picture of the speeds actually available to the residents. Because these tests will be performed at various times of the day, they will provide a good representation of the actual speeds as compared to the “up to” speeds advertised by the providers. In addition, because speed tests are performed all throughout the State, country and the world, these tests will provide a benchmark for comparing the state of broadband throughout Missouri against other states and throughout the world.



# Transforming Agriculture



## TRANSFORMING AGRICULTURE



High-speed connectivity, or broadband, has the potential to transform the agricultural industry in Missouri, including:

- providing an effective, low cost tool for farmers to market their products and reach new customers, selling directly to consumers or niche markets;
- reducing costs to farms and food processors to help increase their competitiveness;
- enabling essential fast Internet access as the number of local distributors of seed, fertilizer, equipment and the like decline -- a digital picture of a broken part can save money and time in repairs;
- providing farmers with access to business tools and other applications from around the world to run their farms more efficiently;
- enabling access to cloud computing to help better handle aspects from managing inventory to monitoring chemical applications or tracking markets;
- providing services that are essential to successfully manage a farm, market products and to communicate with suppliers, customers and markets around the world.

### **MoBroadbandNow INITIATIVE**

<http://transform.mo.gov/broadband/>

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*“AGRICULTURAL ENTERPRISES DELIVER HIGH-QUALITY FOOD TO THE UNITED STATES AND THE WORLD. AS OUR FARMERS AND FOOD PROCESSORS COMPETE IN A GLOBAL DIGITAL ECONOMY, BROADBAND WILL HELP EMPOWER THEIR BUSINESSES WITH APPLICATIONS THAT INCLUDE EVERYTHING FROM MARKETING TO MANAGING FERTILIZER APPLICATIONS. BROADBAND CAN HELP THESE VALUABLE BUSINESSES BRIDGE THE DIGITAL DIVIDE AND PARTICIPATE FULLY IN LOCAL, NATIONAL AND WORLD MARKETS.”*

### FEDERAL COMMUNICATIONS COMMISSION (FCC) NATIONAL BROADBAND PLAN

The FCC's National Broadband Plan includes goals for our agriculture and rural communities. These goals serve as a starting point for regional discussions about the best way to deliver and use broadband technology to transform the agriculture industry across Missouri. The Plan's recommendations include:

***Give local farms and their employees the broadband training they need to remain competitive in the global economy***

Small businesses, including local farms across the state of Missouri, account for a majority of the more than 1.2 million new jobs generated by the growth of the Internet during the last 10 to 15 years. The Small Business Administration and the FCC's Office of Communications Business Opportunities should work together with leading private



communications and technology firms to provide tools and training -- applying proven ideas and practices in Missouri's agricultural industry.

***Keep rural farming communities competitive and innovative in the 21st century economy by putting broadband at the forefront of regional development***

Communities without broadband technology will be left behind - on the outside looking in concerning the digital revolution. Broadband technology allows regions and communities to compete globally -- attracting new firms, investments and jobs. Local economic development plans and federal programs must take this into account when assessing the economic prospects of our agricultural community.

***How can Broadband Transform the Agriculture Industry in my area?***

Several other factors need to be considered along with implementing broadband technology. Are the right tools in place for our agricultural industry to leverage broadband? Do current processes and procedures allow enough room for use of broadband? Is everyone properly trained to use the technology effectively?

*MoBroadbandNow*, a five-year initiative launched by Gov. Nixon in 2009, coordinates efforts to obtain funding from the U.S. Department of Agriculture and the U.S. Department of Commerce specifically set aside for broadband expansion.

*MoBroadbandNow* seeks to expand broadband accessibility to 95 percent of the total population, a significant increase from the current projected accessibility of 79.7 percent.

*MoBroadbandNow* can provide education, awareness, and facilitate communication of funding opportunities for our agricultural industry.

But, we also need to have a fuller understanding of how the agricultural industry would like to use broadband, and what are the barriers and challenges you face integrating broadband into your agri-business?

Please share your stories with us at: <http://transform.mo.gov/broadband/>

Follow us on Twitter -- @MoBroadbandNow -- to stay up to speed on broadband news

**HOW WILL BROADBAND IMPACT  
THE DAY-TO-DAY LIVES OF  
MISSOURIANS**

*Capacity, choice and speed are some of the obvious benefits of expanded broadband. What may not be as obvious is the potential that comes about when technology opens that door to opportunity. It is safe to say the availability of a robust broadband network would touch some, if not many aspects of our citizens' lives.*

**QUESTIONS TO CONSIDER ABOUT THE AGRICULTURAL INDUSTRY AND BROADBAND**

1. Are the right tools in place for the agricultural industry to leverage broadband? If yes, what tools are in place? If not, what hardware, software and other equipment do you need? Can you provide examples of how it would improve today's agricultural industry?
2. Do current processes and procedures encourage the use of broadband? What could you do differently with broadband that would promote its use in agri-business?
3. Is everyone properly trained to use broadband technology effectively? How can we better prepare the agricultural workforce to utilize broadband to its maximum benefit?
4. Does broadband access and availability meet minimum standards for effective agricultural applications? If yes, how? If not, what are the locations that need broadband enhancements and the challenges in getting it there?
5. Is broadband technology cost prohibitive? If so, what are some cost-saving measures that could be implemented to increase use?



# Transforming Economic Development



## TRANSFORMING SMALL AND RURAL BUSINESSES

High speed connectivity, or broadband, enhances the opportunities for current businesses, while providing the infrastructure to attract entrepreneurs, knowledge workers, and technology-based companies that would not have otherwise considered locating in Missouri.

## FEDERAL COMMUNICATIONS COMMISSION (FCC) NATIONAL BROADBAND PLAN

The FCC's National Broadband Plan includes goals for our small and rural businesses. These goals serve as a starting point for regional discussions about the best way to deliver and use broadband technology to transform the economy across the state. The Plan's recommendations include:

***Give small businesses and their employees the broadband training they need to remain competitive in the global economy***

Small businesses account for a majority of the more than 1.2 million new jobs generated by the growth of the Internet during the last 10 to 15 years. The Small Business Administration and the FCC's Office of Communications Business Opportunities should work together with leading private communications and technology firms to provide tools and training -- applying proven ideas and practices in the digital economy.

***Build a new online national employment assistance platform to efficiently connect struggling workers with resources***

As our economy continues to rebound, broadband can be utilized to deliver assistance to help the underemployed and unemployed excel in the modern workplace. Technology-based instruction for vocational training reduces the cost by about a third, while also decreasing the time required and increasing the effectiveness of instruction.

***Keep American communities competitive and innovative in the 21st century economy by putting broadband at the forefront of regional development***

Communities without broadband technology will be left behind -- on the outside looking in at the digital revolution. Broadband technology allows regions and communities to compete globally -- attracting new firms, investments and jobs. Local economic development plans and federal programs must take this into account when assessing the economic prospects of our communities.

***Help eliminate tax and regulatory barriers to telework so workers can do their jobs from anywhere.***

At the center of the modern, digital economy is telework and telecommuting -- working from anywhere using Internet and broadband

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connections. Next-generation technologies are connecting employers with jobs across town, across the state and across the country. The FCC will work with other agencies to serve as the example for the private sector by working to implement policies and technology that enable teleworking and telecommuting.

### ***How can Broadband Transform Small and Rural Businesses in my area?***

Several other factors need to be considered along with implementing broadband technology. Are the right tools in place for businesses to leverage broadband? Do current processes and procedures encourage the use of broadband? Is everyone properly trained to use the technology effectively?

*MoBroadbandNow*, a five-year initiative launched by Gov. Nixon in 2009, coordinates efforts to obtain funding from the U.S. Department of Agriculture and the U.S. Department of Commerce specifically set aside for broadband expansion. *MoBroadbandNow* seeks to expand broadband accessibility to 95 percent of the total population, a significant increase from the current projected accessibility of 79.7 percent.

*SMALL BUSINESSES CREATE JOBS FOR THOUSANDS OF MISSOURI RESIDENTS AND REVITALIZE COMMUNITIES. SMALL BUSINESSES CAN LEVERAGE BROADBAND TO FIND SUPPLIERS, TRAIN EMPLOYEES AND MARKET THEIR PRODUCTS OR SERVICES IN A WAY THAT MAKES SIZE AND LOCATION LESS RELEVANT.*

*MoBroadbandNow* can provide education, awareness, and facilitate communication of funding opportunities for small and rural businesses.

But, we also need to more fully understand how businesses would like to use broadband, and what are the barriers and challenges to integration?

Please share your stories with us at: <http://transform.mo.gov/broadband/>

Follow us on Twitter -- @MoBroadbandNow -- to stay up to speed on broadband news, program activities and funding opportunities.

### **IN THEIR OWN WORDS ...**

*It would also allow us to improve marketing capabilities, and ultimately provide means of growth in the company.*

**-Burgers' Smokehouse**

*The proposed network would provide an economic lifeline to Cooper County.*

**-Cooper County Commission**

### **QUESTIONS TO CONSIDER ABOUT BUSINESS, THE ECONOMY AND BROADBAND**

1. Are the right tools in place for businesses to leverage broadband? If yes, what tools are in place? If not, what hardware, software and other equipment do you need? Can you provide examples of how it would improve today's businesses?
2. Do current processes and procedures encourage the use of broadband? What could you do differently with broadband that would promote its use in the business sector?
3. Is everyone properly trained to use broadband technology effectively? How can we better prepare the workforce to utilize broadband to its maximum benefit?
4. Does broadband access and availability meet minimum standards for effective businesses and e-commerce applications? If yes, how? If not, what are the locations that need broadband enhancements and the challenges in getting it there?
5. Is broadband technology cost prohibitive? If so, what are some cost-saving measures that could be implemented to increase use?

# Transforming Energy & Environment



## TRANSFORMING ENERGY AND THE ENVIRONMENT



High-speed connectivity, or broadband, has the potential to transform energy and the environment, including:

- enabling technologies and services like telemedicine, visual business communication programs and e-commerce that have allowed us to turn things that typically required travel into activities that are virtually carbon neutral;
- use of smart meters, smart buildings, smart grids which provide greater control over our use of energy in our homes and businesses;
- allowing energy savings to spread to every home through two-way communication including “smart appliances” that are only in use when they are needed.

## FEDERAL COMMUNICATIONS COMMISSION (FCC) NATIONAL BROADBAND PLAN

The FCC’s National Broadband Plan includes goals for energy and the environment. These goals serve as a starting point for regional discussions about the best way to deliver and use broadband technology to transform energy and the environment across Missouri. The Plan’s recommendations include:

*“AMERICA’S ENERGY DEMANDS  
CONTINUE TO GROW WHILE*

*PRESSURE TO FOCUS ON  
PRESERVING OUR ENVIRONMENT AND  
MOVE TO A “GREEN ECONOMY” ARE  
ALSO INCREASING. BROADBAND OFFERS  
THE OPPORTUNITY TO REDUCE OUR  
COUNTRY’S CARBON FOOTPRINT AND  
OUR DEPENDENCE ON FOREIGN OIL,  
WHILE SPURRING ECONOMIC GROWTH  
THROUGH NEW ENVIRONMENTAL JOBS.”*

***Unleash energy innovation in  
homes by making energy data  
readily accessible to consumers***

Often, when citizens get informational feedback on their energy usage, they make adjustments that cut back their energy use. Access to real-time information through broadband can also allow control of automated thermostats and appliances; automatically saving residents money through smart energy consumption. To unleash innovation in smart homes and buildings, every Missouri resident should be able manage their real-time energy consumption using broadband technology.

***Modernize the electric grid with  
broadband, making it more  
reliable and efficient***

Modernization of the power grid is key to solidifying American energy independence and efficiency. Paired with high-tech tools, like dynamic management software and remote

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sensors, broadband will be crucial to advancing innovations in renewable power, grid storage, and vehicle electrification.

There are more than 3,000 electric utilities across the United States -- each with their own topographies, environments, and regulatory administrations. This means that a modern "Smart Grid" will not use just one type of communications network -- making the flexibility and scope of broadband a perfect fit for the challenge.

### ***Improve the energy efficiency and environmental impact of the information and communication technology (ICT) sector***

The electricity used by data storage centers alone is expected to double from 2006 to 2011. Government should work with industry to examine how to accurately measure the energy and environmental impact of data

centers and to develop solutions to make them more efficient. In addition, the FCC will work with the industry to understand how the ICT sector can improve its energy efficiency and environmental impact.

### ***Transition to a safer, cleaner, and more efficient transportation sector***

The transportation industry is the second largest consumer of energy and the second highest emitter of greenhouse gases. Digital developments -- like real-time traffic information systems and navigation tools -- can enable more efficient route-planning and driving for commuters and commercial transit operators. A more connected transportation sector can also promote safety, ease navigation, and enable tools to reduce distracted driving. Access to broadband can also incentivize mass transit by giving riders a more productive, connectivity-rich commute.

## ***How can Broadband Transform Energy and the Environment in my area?***

Several other factors need to be considered along with implementing broadband technology. Are the right tools in place for energy providers and consumers to leverage broadband? Do current processes and procedures allow enough room for use of broadband? Is everyone properly trained to use the technology effectively?

*MoBroadbandNow*, a five-year initiative launched by Gov. Nixon in 2009, coordinates efforts to obtain funding from the U.S. Department of Agriculture and the U.S. Department of Commerce specifically set aside for broadband expansion. *MoBroadbandNow* seeks to expand broadband accessibility to 95 percent of the total population, a significant increase from the current projected accessibility of 79.7 percent.

*MoBroadbandNow* can provide education, awareness, and facilitate communication of funding opportunities for the energy and environmental sectors.

But, we also need to more fully understand how energy and environmental companies would like to use broadband, and what are the barriers and challenges they face to integration?

Please share your stories with us at: <http://transform.mo.gov/broadband/>

Follow us on Twitter -- @MoBroadbandNow -- to stay up to speed on broadband news, program activities and funding opportunities.

### **QUESTIONS TO CONSIDER ABOUT ENERGY, ENVIRONMENTAL ISSUES AND BROADBAND**

1. Are the right tools in place for our energy and environmental goals to leverage broadband? If yes, what tools are in place? If not, what hardware, software and other equipment do you need? Can you provide examples of how it would improve today's energy and environmental sectors?
2. Do current processes and procedures encourage the use of broadband? What could you do differently with broadband that would promote its use in the energy and environmental sectors?
3. Is everyone properly trained to use broadband technology effectively? How can we better prepare the workforce to utilize broadband to its maximum benefit?
4. Does broadband access and availability meet minimum standards to facilitate effective energy and environment-related applications? If yes, how? If not, what are the locations that need broadband enhancements and the challenges in getting it there?
5. Is broadband technology cost prohibitive? If so, what are some cost-saving measures that could be implemented to increase use?

**How can Broadband Transform the Energy and Environmental Issues in my area?**

<http://transform.mo.gov/broadband/>



# Transforming Healthcare



## TRANSFORMING HEALTHCARE

High-speed connectivity, or broadband, has the potential to transform healthcare across Missouri, including:

- the ability for transmission and interpretation of large files in real-time, even remotely -- MRI, ultrasound and X-rays;
- real-time data exchanged from devices worn by the patient, allowing more comprehensive health monitoring, particularly chronic conditions;
- enabling Missouri's 'baby boomers' to "age in place" with access to quality care from wherever they live, lowering costs and trauma associated with moving to assisted living or nursing facilities;
- assisting medical personnel administering care more effectively when seconds count, giving access to crucial information to local providers, potentially lowering the number of patients who require transport to larger hospitals.

## FEDERAL COMMUNICATIONS COMMISSION (FCC) NATIONAL BROADBAND PLAN

The FCC's National Broadband Plan includes goals for our healthcare system. These goals serve as a starting point for regional discussions about the best way to deliver and use broadband technology to transform healthcare. The Plan's recommendations include:

*"HOSPITALS, CLINICS AND PHYSICIANS DELIVER QUALITY CARE ON A DAILY BASIS. BUT THEY ARE FACED WITH AN AGING POPULATION, RISING HEALTH CARE COSTS AND MILLIONS OF PEOPLE WITH NO HEALTHCARE COVERAGE AT ALL. BROADBAND CAN NOT ONLY HELP CUT COSTS, IT CAN IMPROVE ACCESS TO OUR NATION'S WORLD-CLASS HEALTH CARE RESOURCES DESPITE THE CHALLENGES OF DISTANCE AND DISPARITY IN RESOURCES."*

## ***Ensure all healthcare providers have access to affordable broadband, by revamping the Rural Health Care Program***

More often than not, consumer broadband infrastructure is too expensive or inadequate for rural clinics and small physician offices. The National Broadband Plan outlines major changes to the FCC's Rural Health Care Program to better use authorized funding of \$100 million annually to help meet these challenges. The plan includes calls for assisting healthcare providers in purchasing broadband services and expanding the program to more institutions.

## ***Create economic incentives for broader health IT adoption and innovation***

There is a need to implement reimbursement and other economic incentives to help providers adopt broadband and help to close the health IT gap. The National Broadband Plan highlights investments

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that Congress and the U.S. Department of Health and Human Services are making to incentivize the adoption of e-records (electronic health records), and supports a similar approach for implementation of e-care technologies.

***Unlock the power of healthcare data and advanced analytics, while protecting privacy***

E-records (electronic health records) are a goldmine of useful data, with the potential to transform medicine -- if patient privacy is fully protected. The National Broadband Plan supports further development of cross-platform and data access, offering suggestions for ongoing actions by the government to enable this development.

***Modernize rules to increase access to e-care***

The National Broadband Plan suggests increasing implementation of e-care technologies by adjusting

standards - licensing, privileging, and credentialing - which currently erect barriers to medical professionals abilities to practice medicine remotely and across state lines.

***How can Broadband Transform Healthcare in my area?***

Several other factors need to be considered along with implementing

*“TELEMEDICINE AND TELEHEALTH HAVE THE POTENTIAL TO REVOLUTIONIZE HEALTHCARE IN RURAL AMERICA BY ALLOWING RURAL PROVIDERS AND PATIENTS THE OPPORTUNITY OF ACCESS TO SPECIALISTS, RETRIEVAL OF HEALTH RECORDS, IMPROVED EMERGENCY RESPONSE, REDUCING TRANSPORTATION COSTS, OFFERING NEW ALTERNATIVES FOR HOME HEALTH AND E-VISITS, AND CONNECTING HEALTH PROFESSIONALS TO THEIR PATIENTS IN REAL TIME.”*

broadband technology. Are the right tools in place for healthcare providers to leverage broadband? Do current processes and procedures allow enough room for use of broadband? Is everyone properly trained to use the technology effectively?

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One approved project involves Blue-Bird Media. As part of the Northern Missouri Ultra-High Capacity Middle Mile Project, BlueBird Media plans to empower healthcare institutions to implement regional health information exchanges and encourage adoption of telehealth, in addition to advanced medical imaging and medical collaboration in rural areas. Telehealth would also play a role in enabling regional correctional facilities to reduce expensive inmate transport and reduce security risks.

*MoBroadbandNow* can provide education, awareness, and facilitate communication of funding opportunities for healthcare.

But, we also need to have a fuller understanding of how healthcare providers would like to use broadband, and what are the challenges to integration?

Please share your stories with us at: <http://transform.mo.gov/broadband/>

Follow us on Twitter -- @MoBroadbandNow -- to stay up to speed on broadband news.

**QUESTIONS TO CONSIDER ABOUT HEALTHCARE AND BROADBAND**

1. Are the right tools in place for healthcare providers to leverage broadband? If yes, what tools are in place? If not, what hardware, software and other equipment do you need? Can you provide examples of how it would improve today's healthcare industry?
2. Do current processes and procedures encourage the use of broadband? What could you do differently with broadband that would promote its use in the healthcare industry?
3. Is everyone properly trained to use broadband technology effectively? How can we better prepare the healthcare workforce to utilize broadband to its maximum benefit?
4. Does broadband access and availability meet minimum standards for effective telehealth applications? If yes, how? If not, what are the locations that need broadband enhancements and the challenges in getting it there?
5. Is broadband technology cost prohibitive? If so, what are some cost-saving measures that could be implemented to increase use?

# Transforming Higher Education



## TRANSFORMING HIGHER EDUCATION



High-speed connectivity, or broadband, has the potential to transform higher education in Missouri by:

- easing classroom overcrowding when traditional on-site classes fill up, allowing students to access popular core classes without losing time as they are working towards a degree;
- enabling students who cannot attend class to access digitally captured lectures;
- enabling students to collaborate on a shared virtual “blackboard” -- integrating social media tools, videos, chat rooms in conjunction with course curriculum and other class resources;
- enabling videoconferencing that allows colleges to serve several branch campuses simultaneously.

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## FEDERAL COMMUNICATIONS COMMISSION (FCC) NATIONAL BROADBAND PLAN

The FCC’s National Broadband Plan includes goals for our education system. These goals serve as a starting point for regional discussions about the best way to deliver and use broadband technology to transform higher education in Missouri. The Plan’s recommendations include:

*“ALL LEVELS OF THE EDUCATION CONTINUUM, INCLUDING PRIMARY, SECONDARY, POST-SECONDARY, HOME-SCHOOLING, AND CONTINUING EDUCATION PROGRAMS, STAND TO GAIN INCREDIBLE OPPORTUNITIES. HIGH SPEED CONNECTIVITY OFFERS THE PROMISE OF REMOTE CLASS INSTRUCTION, SHARED COURSE OFFERINGS, AND FACULTY AND ADMINISTRATORS NETWORKING WITH PEERS.”*

### **Modernize broadband infrastructure to support 21st century teaching and learning**

While universities and colleges in Missouri have access to broadband, going forward we need to ensure that the networks that support higher education are robust and designed to have room to grow. Higher education is the home of entrepreneurial research centers that can move our state in a positive direction. Responsive broadband networks for data collection and other higher education needs are a necessity.

### **Expand access to broadband with common sense reforms**

Communities are best served when schools and libraries leverage their technology resources. Wireless educational options that can serve students wherever they are and offering schools and libraries the choice to purchase their area’s low-cost broadband option are changes



to E-rate that the FCC's plan recommends. Giving schools the option of opening up access to their networks after class instruction, for other programs like continuing education will enable more Missouri residents to be served without an additional cost.

### ***Improve access to high-quality, online instruction***

Faculty and students will benefit from high quality online learning solutions. Advancements in online learning require research and development of online learning

systems, including creating online course material and ways to share it (such as making it easier to share materials across different colleges and universities). It is widely held that many students learn best when instruction is personalized to meet their individual learning needs, and online learning can help faculty provide this.

### ***Unlock the power of educational data***

To make properly informed decisions that will improve

education, all stakeholders -- faculty, students and administrators -- need to be able to quickly access correct, current educational data. Broadband will put the data that faculty need to help students succeed at their fingertips.

### ***How can Broadband Transform Higher Education in my area?***

Several other factors need to be considered along with implementing broadband technology. Are the right tools in place for faculty and students to leverage broadband? Do current processes and procedures allow enough flexibility for use of broadband? Are faculty and students properly trained to use the technology effectively?

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*MoBroadbandNow* can provide education, awareness, and facilitate communication of funding opportunities for higher education.

But, we also need to have a fuller understanding of how higher education interests would like to use broadband, and what are the barriers and challenges to integration?

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### **IN THEIR OWN WORDS ...**

*Although online learning is indeed to be done at a student's home (at least not on a campus), a number of students who live in areas in Central Missouri that do not currently have connections...or reliable connections...at their homes, actually travel back to the campus in order to take their online classes in one of our computer labs! -Marianne Inman, Ph.D., President, Central Methodist Univ.*

### **QUESTIONS TO CONSIDER ABOUT HIGHER EDUCATION AND BROADBAND**

1. Are the right tools in place for faculty and students to leverage broadband? If yes, what tools are in place? If not, what hardware, software and other equipment do you need? Can you provide examples of how it would improve today's higher education?
2. Do current processes and procedures encourage the use of broadband? What could you do differently with broadband that would promote its use in higher education?
3. Is everyone properly trained to use broadband technology effectively? How can we better prepare the faculty and students to utilize broadband to its maximum benefit?
4. Does broadband access and availability meet the minimum standards needed to facilitate effective higher education applications? If yes, how? If not, what are the locations that need broadband enhancements and the challenges in getting it there?
5. Is broadband technology cost prohibitive? If so, what are some cost-saving measures that could be implemented to increase use?



# Transforming Libraries



## TRANSFORMING LIBRARIES



High-speed connectivity, or broadband, has the potential to transform Missouri's libraries and the communities they serve, including:

- ensuring that libraries remain, because they are often the only source for free internet access, providing a critical link for filling out government forms, job applications, starting a business, engaging in day-to-day life;
- allowing even those who have connection elsewhere also use library computers because they:
  - need a faster connection
  - need assistance from a librarian
  - have to compete for use of the computer at home
  - want to use a computer in a safe, quiet environment;
- facilitating digital literacy training opportunities;
- enabling students to access educational materials and research material not found elsewhere;
- facilitating use of video-conferencing to allow participation in meetings and educational opportunities;
- ensuring that libraries can be a community's online link during a disaster;
- providing the ability to download audio books, video and other DVD materials;
- providing access to an online audio-video system.

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*“PUBLIC LIBRARIES SERVE COMMUNITIES OF ALL SIZES AS A SOURCE FOR RESEARCH, A COMMUNITY MEETING PLACE, A PLACE FOR ACCESS TO EDUCATION AND NEWS FROM AROUND THE WORLD. LIBRARIES WITH BROADBAND BECOME GATEWAYS TO INFORMATION IN COMMUNITIES WHERE BROADBAND ACCESS IS NOT UNIVERSAL AND FOR COMMUNITY MEMBERS WITHOUT THE MEANS TO OWN A COMPUTER OR PURCHASE BROADBAND CONNECTIVITY FOR THEMSELVES. LIBRARIES HELP CLOSE THE ‘DIGITAL DIVIDE’ THAT THREATENS TO LEAVE PEOPLE BEHIND.”*

### FEDERAL COMMUNICATIONS COMMISSION (FCC) NATIONAL BROADBAND PLAN

The FCC's National Broadband Plan includes goals for our libraries and the communities they serve. These goals serve as a starting point for regional discussions about the best way to deliver and use broadband technology to transform our area libraries. The Plan's recommendations include:

#### ***Expand access to broadband with common sense reforms***

Communities are best served when libraries and schools leverage their technology resources. Wireless broadband options that can serve library patrons and residents wherever they live and giving schools and libraries the choice to purchase their area's low-cost



broadband option are changes to E-rate that the FCC's plan recommends.

Other parts of the plan would:

- open up E-rate to support internal connections in libraries
- set minimum broadband connectivity goals for libraries and prioritize funds accordingly
- adjust E-rate funding for inflation
- amend the Communications Act to help tribal libraries overcome barriers to E-rate eligibility

### ***How can Broadband Transform Libraries in my area?***

Several other factors need to be considered along with the implementation of broadband technology. Are the right tools in place for libraries and library staff to leverage broadband? Do current processes and procedures allow enough room for use of broadband? Is everyone properly trained to use the technology effectively?

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specifically set aside for broadband expansion. *MoBroadbandNow* seeks to expand broadband accessibility to 95 percent of the total population, a significant increase from the current projected accessibility of 79.7 percent.

*MoBroadbandNow* can provide education, awareness, and facilitate communication of funding opportunities for libraries.

But, we also need to more fully understand how libraries would like

to use broadband, and what are the barriers and challenges to integration?

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### **QUESTIONS TO CONSIDER ABOUT LIBRARIES AND BROADBAND**

1. Are the right tools in place for library staff and patrons to leverage broadband? If yes, what tools are in place? If not, what hardware, software and other equipment do you need? Can you provide examples of how it would improve today's libraries?
2. Do current processes and procedures encourage the use of broadband? What could you do differently with broadband that would promote its use in libraries?
3. Is everyone properly trained to use broadband technology effectively? How can we better prepare library staff and patrons to utilize broadband to its maximum benefit?
4. Does broadband access and availability meet minimum standards to effectively facilitate library applications and those of patrons utilizing the libraries computers and Internet access?
5. Is broadband technology cost prohibitive? If so, what are some cost-saving measures that could be implemented to increase use?

*"Of those who went to the public library last year, 68% used a computer there, indicating an impressive change in the role of public libraries."*  
—Pew Internet & American Life Study

*"Public libraries have helped close the digital divide by providing free, public access to computers and the Internet, particularly for people without access at home or work."*  
—Bill Gates Foundation

*"By offering free access to computing, and therefore information, libraries bring opportunity to all."*  
—Carla Hayden, president, American Library Association

# Transforming Missouri via Public/Private Broadband Partnerships



*"THIS PUBLIC/PRIVATE COOPERATION WILL CARRY LASTING BENEFITS IN BRINGING HIGH-SPEED COMMUNICATION TO MISSOURIANS ACROSS THE STATE, INCLUDING GIVING DOCTORS BETTER AND QUICKER RESOURCES TO TREAT THEIR PATIENTS; ALLOWING TEACHERS AND STUDENTS TO ACCESS THE POWER OF EDUCATIONAL TOOLS THAT OTHER SCHOOLS HAVE; AND PUTTING SMALL BUSINESSES ON A LEVEL PLAYING FIELD WITH THEIR COMPETITORS FROM AROUND THE WORLD." -- GOVERNOR JAY NIXON*



## TRANSFORMING MISSOURI VIA PUBLIC/ PRIVATE BROADBAND PARTNERSHIPS

High-speed connectivity, or broadband, is increasingly becoming essential to compete in the global marketplace, keep current with advancing technologies and maintain and enhance state and regional economic, social and political development.

Missouri is joining the National Broadband Initiative by developing public/private partnerships with

MoBroadbandNow, the state's program to expand broadband capabilities to more of its residents.

Given the wide-reaching impact broadband service has on multiple aspects of everyday life, broadband access has risen to the level of a public utility; as essential for development as power and water.

Broadband, and the efforts to expand access to more citizens, is providing an ideal situation for a public/private partnership to

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function. Public/private partnerships have proven to be an effective model for expanding the availability of broadband and increasing computer literacy and Internet use.

Local, state and regional governments (public) have the means to assist in advancing the broadband climate -- existing utility grids, accurate access mapping, census data, the ability to reach all citizens and coordinate massive, cross-jurisdictional programs.

Telecom businesses, broadband providers, IT developers (private) have the associated knowledge and technology. Together, the public and

private sectors are making plans for expanding broadband access a reality.

#### FEDERAL COMMUNICATIONS COMMISSION (FCC) NATIONAL BROADBAND PLAN

The goals for broadband outlined in the FCC's National Broadband Plan are providing the impetus for public/private partnerships to emerge. These goals serve as a starting point for regional discussions about the best way to deliver and use broadband technology across Missouri. The Plan's recommendations encompass:

- Healthcare, 21st Century Care
- Government Performance (Local, State, Regional, National)
- Economic Development and Opportunity
- Education (K-12, Higher Education, Libraries)
- Energy and the Environment
- Public Safety
- Civic Engagement
- Agriculture

*"TO DEAL WITH DIFFICULT CONDITIONS LIKE HIGH UNEMPLOYMENT, MISSOURI MUST TRANSFORM ITS ECONOMY BY ADAPTING TO THE GLOBAL MARKETPLACE AND EMBRACING HIGH-GROWTH INDUSTRIES. TO BE TRULY COMPETITIVE IN THE 21ST CENTURY WE MUST UPGRADE OUR TECHNOLOGY INFRASTRUCTURE WITH THE GOAL OF GIVING EVERY MISSOURIAN ACCESS TO THE INFORMATION SUPERHIGHWAY. BECAUSE THIS IS AN OPPORTUNITY OF GREAT IMPORTANCE FOR EDUCATION, FOR AGRICULTURE AND FOR INDUSTRY, I BELIEVE MISSOURI MUST PUT ITS BEST FOOT FORWARD IN WHAT WILL BE A FIERCE COMPETITION FOR FEDERAL BROADBAND GRANTS. SO THE STATE WILL WORK TOGETHER WITH PRIVATE INDUSTRY AND USE THE STRENGTHS OF EACH TO PURSUE AN ACHIEVABLE VISION FOR UNIVERSAL ACCESS."*

-- GOVERNOR JAY NIXON

#### *How can Broadband Transform Public/Private Partnerships in my area?*

Several other factors need to be considered along with implementing broadband technology. Are the right tools in place for public/private partnerships to leverage broadband? Do current processes and procedures allow enough room for use of broadband? Is everyone properly trained to use the technology effectively?

*MoBroadbandNow*, a five-year initiative launched by Gov. Nixon in 2009, is a public/private partnership that coordinates efforts to aggressively compete for federal funds under the 2009 American Recovery & Reinvestment Act (ARRA) from the U.S. Department of Agriculture and the U.S. Department of Commerce specifically set aside for broadband expansion in efforts. *MoBroadbandNow* seeks to expand broadband accessibility to 95% of the total population, a significant increase from the current projected accessibility of 79.7%.

*MoBroadbandNow* can provide education, awareness, and facilitate communication of funding opportunities for public/private partnerships.

But, we also need to more fully understand how local stakeholders would like to use broadband, and what are the barriers and challenges to integration?

Please share your stories with us at: <http://transform.mo.gov/broadband/>

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# Transforming Local Government



*“STATE, COUNTY AND CITY STAFF DELIVER A VARIETY OF SERVICES TO THE PEOPLE IN THEIR REGIONS. THOSE SERVICES SPAN EVERYTHING FROM SOCIAL SERVICES TO HEALTH AND SAFETY. YET MANY OF THESE GOVERNMENTS ARE FACING INCREASED DEMAND FOR SERVICES, COUPLED WITH SHRINKING BUDGETS. WHILE NOTHING WILL REPLACE THE VALUE OF FACE-TO-FACE CONTACT WITH A PUBLIC SERVANT, ESPECIALLY FOR VULNERABLE POPULATIONS, BROADBAND HAS THE CAPACITY TO DELIVER MANY SERVICES EFFICIENTLY AND RAPIDLY WHILE OPENING UP NEW VENUES FOR CIVIC ENGAGEMENT.”*

## **MoBroadbandNow INITIATIVE**

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### **Twitter:**

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**Damon Porter**  
MoBroadbandNow Director  
Office of Administration

## TRANSFORMING LOCAL GOVERNMENT

High-speed connectivity, or broadband, has the potential to transform local government in Missouri by:

- enabling online handling of routine requests (i.e. licensing and tax questions) faster, cheaper and with fewer resources;
- enabling online transmission and viewing of large files necessary for transactions (like building permits), which shortens government response time;
- enabling real-time traffic conditions and public transit updates to be accessed online;
- facilitating two-way video streaming that allows constituents to join public government meetings from a distance;
- facilitating videoconferencing to handle arraignments, depositions and interpreter services which will cut costs in the criminal justice system;
- enabling e-mail, online petitions and social networks that allow for instant communication between constituents and elected officials.

## FEDERAL COMMUNICATIONS COMMISSION (FCC) NATIONAL BROADBAND PLAN

The FCC's National Broadband Plan includes goals for our government. These goals serve as a starting point for regional discussions about the



best way to deliver and use broadband technology to transform local government across Missouri. The Plan's recommendations include:

***Streamline complex government processes and deliver services online to citizens quickly and efficiently***

For example, someone wanting to communicate with social services can access local government and state government at the same time through broadband-enabled online services. Paper trails can be a thing of the past. Governments can move forms online with broadband technology. Online tutorials for basic government services can be made available, freeing government employees to focus on more complex issues. Efficiency can be boosted using broadband by increasing the speed and depth of cooperation across departments and levels of government.



<http://transform.mo.gov/broadband/>

**Embrace cost-saving platforms and infrastructure that also increase productivity**

Government can become a model of efficiency and increased performance through strategic deployment of broadband-enabled technologies. Social media tools can be leveraged to improve internal collaboration, communication, and efficiency within the government and between government and its constituencies.

**Partner with ISPs to make sure America's communications networks are strong and secure**

Building on efforts already begun by Internet Service Providers (ISPs), the FCC should work with ISPs to build cybersecurity protection and defenses into networks offered to business and individuals. To meet this global challenge, the government should also continue to build

workforce capability in cybersecurity to ensure our networks - and the information that travels over them - are reliable, safe, and secure.

**Allow state and local governments to leverage the buying power of the federal government to get lower service prices for telecommunication services and infrastructure**

State and local governments often buy technology hardware and software under contracts that leverage group buying power. Access to federal contracts could further efforts to consolidate purchases and save local and state governments time and money.

**How can Broadband Transform Local Government in my area?**

Several other factors need to be considered along with implementing broadband technology. Are the right tools in place for local government to leverage broadband? Do current processes and proce-

dures allow enough room for use of broadband? Is everyone properly trained to use the technology effectively?

*MoBroadbandNow*, a five-year initiative launched by Gov. Nixon in 2009, coordinates efforts to obtain funding from the U.S. Department of Agriculture and the U.S. Department of Commerce specifically set aside for broadband expansion. *MoBroadbandNow* seeks to expand broadband accessibility to 95 percent of the total population, a significant increase from the current projected accessibility of 79.7 percent.

*MoBroadbandNow* can provide education, awareness, and facilitate communication of funding opportunities for local government.

But, we also need to more fully understand how local government would like to use broadband, and what are the barriers and challenges you face to integrating it into your community?

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**IN THEIR OWN WORDS ...**

*Without access to broadband networks our community will not attract new industry and create technology-based jobs. For protection of our communities we need this access to provide essential services from our police, fire protections, local governments, hospitals, libraries and schools. — City of Laurie*

*The lack of broadband coverage to key sectors of our County impedes our ability to attract, retain, and grow the personal and professional lives of our citizens. — Benton County Development Corporation*

**QUESTIONS TO CONSIDER ABOUT LOCAL GOVERNMENT AND BROADBAND**

1. Are the right tools in place for local government to leverage broadband? If yes, what tools are in place? If not, what hardware, software and other equipment do you need? Can you provide examples of how it would improve today's local government?
2. Do current processes and procedures encourage the use of broadband? What could you do differently with broadband that would promote its use in local government?
3. Is everyone properly trained to use broadband technology effectively? How can we better prepare the local government workforce to utilize broadband to its maximum benefit?
4. Does broadband access and availability meet minimum standards for effective online government services? If yes, how? If not, what are the locations that need broadband enhancements and the challenges in getting it there?
5. Is broadband technology cost prohibitive? If so, what are some cost-saving measures that could be implemented to increase use?

# Transforming Public Safety



*"FIREFIGHTERS, LAW ENFORCEMENT AND EMERGENCY MEDICAL PERSONNEL ARE OFTEN REQUIRED TO QUICKLY MAKE POTENTIALLY LIFE-SAVING DECISIONS IN THE FIELD, DESPITE THE CHALLENGES OF RUGGED TERRAIN AND NATURAL AND MAN-MADE DISASTERS. PUBLIC SAFETY PERSONNEL NEED THE ABILITY TO QUICKLY COMMUNICATE WITH EACH OTHER, ACCESS ONLINE RESOURCES (VIA A PC OR MOBILE DEVICE), CONNECT TO NETWORKS, AND QUICKLY TRANSFER IMPORTANT VIDEO AND DATA FILES DURING EMERGENCIES. BROADBAND CAN HELP MAKE THAT HAPPEN BY ENABLING INFORMED DECISIONS FOR FIRST RESPONDERS AND ALLOWING COMMUNICATION BETWEEN PUBLIC SAFETY PERSONNEL AT ALL TIMES WITHOUT DELAY. THIS COULD GREATLY REDUCE LOSS OF LIFE AND PROPERTY."*



## TRANSFORMING PUBLIC SAFETY

High-speed connectivity, or broadband, has the potential to transform public safety in Missouri, including:

- enabling first-responders and emergency personnel to arrive on scene with up-to-date maps, building plans and utility information, even across jurisdictions;
- enabling treatment of the sick and injured to be more effective in the field through sharing of critical medical information between first-responders and the hospital as the patient is en route;
- enabling law enforcement to have information instantly in their hands -- such as photos and fingerprints of suspects;
- allowing police and suspects in high-risk situations to be monitored effectively;
- providing more timely assistance to law enforcement from citizens through text, photos or video sent from mobile devices to enhance Missourians pertinent public safety;
- facilitating faster, more beneficial searches across multiple large databases often accessed by law enforcement; getting essential information to those who need it;

- enabling broadband to be used as a means of communication when usual means of communication like cell phones and radios aren't possible

## FEDERAL COMMUNICATIONS COMMISSION (FCC) NATIONAL BROADBAND PLAN

The FCC's National Broadband Plan includes goals for our public safety services and networks. These goals serve as a starting point for regional discussions about the best way to deliver and use broadband technology to transform public safety in Missouri. The Plan's recommendations include:

### **Create a Nationwide Interoperable Public Safety Wireless Broadband Communications Network**

A national public safety wireless broadband network, allowing all first-responders and emergency personnel to communicate with one another at a moments' notice will be a critical component to ensuring the safety of Missouri residents and all citizens of the United States. Three key pillars are essential to the development and sustainability of such a network:

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- administrative -- ensuring that critical capacity and service are there and functioning
- operational -- provision of an interoperability center to make sure emergency personnel can communicate with one another
- monetary -- a grant program to back the building, running and continuing development of the network

### ***Improve Cybersecurity and Critical Infrastructure Survivability***

As more of the day-to-day business of living is conducted online and over broadband networks, upgrades in safety measures may be required to protect commercial communications infrastructure from cyber-attack. Broadband stakeholders should create a cybersecurity road-map, extend data collection efforts to broadband service providers and establish voluntary incentives to improve cybersecurity.

### ***Leveraging Broadband Technologies to Enhance Emergency Communications to and from the Public***

Emergency 911 call systems are essential in making sure that people can reach emergency personnel and get critical

emergency information. Roll-out of Next Generation 9-1-1 (NG911) and Next Generation Emergency Alerting technologies in the near future is key to maintaining and enhancing that line of communication. Securing adequate funding to support deployment of NG911 and removing regulatory barriers to its deployment should ensure that NG911 is made available across the country.

### ***How can Broadband Transform Public Safety in my area?***

Several other factors need to be considered along with implementing broadband technology. Are the right tools in place for emergency personnel to leverage broadband? Do current processes and procedures allow enough room for use of broadband? Is everyone properly trained to use the technology effectively?

*MoBroadbandNow*, a five-year initiative launched by Gov. Nixon in 2009, coordinates efforts to obtain

funding from the U.S. Department of Agriculture and the U.S. Department of Commerce specifically set aside for broadband expansion. *MoBroadbandNow* seeks to expand broadband accessibility to 95 percent of the total population, a significant increase from current projected accessibility of 79.7 percent.

*MoBroadbandNow* can provide education, awareness, and facilitate communication of funding opportunities for public safety.

But, we also need to more fully understand how the public safety sector would like to use broadband, and what are the barriers and challenges to integration?

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### **HOW WILL BROADBAND IMPACT THE DAY-TO-DAY LIVES OF MISSOURIANS**

*Capacity, choice and speed are some of the obvious benefits of expanded broadband. What may not be as obvious is the potential that comes about when technology opens that door to opportunity. It is safe to say the availability of a robust broadband network would touch some, if not many aspects of our citizens' lives.*

### **QUESTIONS TO CONSIDER ABOUT PUBLIC SAFETY AND BROADBAND**

1. Are the right tools in place for the public safety sector to leverage broadband? If yes, what tools are in place? If not, what hardware, software and other equipment do you need? Can you provide examples of how it would improve today's public safety sector?
2. Do current processes and procedures encourage the use of broadband? What could you do differently with broadband that would promote its use in the public safety sector?
3. Is everyone properly trained to use broadband technology effectively? How can we better prepare the public safety workforce to utilize broadband to its maximum benefit?
4. Does broadband access and availability meet minimum standards for critical public safety applications? If yes, how? If not, what are the locations that need broadband enhancements and the challenges in getting it there?
5. Is broadband technology cost prohibitive? If so, what are some cost-saving measures that could be implemented to increase use?



# Transforming Education



## TRANSFORMING EDUCATION

High-speed connectivity, or broadband, has the potential to transform education in Missouri, including:

- easing classroom overcrowding when traditional on-site classes fill up, allowing students to get popular core classes without losing time as they are working towards a diploma;
- enabling students who cannot come to class to access digitally captured lectures;
- enabling students to collaborate on a shared virtual “blackboard” -- integrating social media tools, videos and chat rooms in conjunction with course curriculum and other class resources;
- videoconferencing that allows several school districts to bring classes to areas where they are not available.

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## FEDERAL COMMUNICATIONS COMMISSION (FCC) NATIONAL BROADBAND PLAN

The FCC’s National Broadband Plan includes goals for our education system. These goals serve as a starting point for regional discussions about the best way to deliver and use broadband technology to transform education. The Plan’s recommendations include:

*“ALL LEVELS OF THE EDUCATION CONTINUUM, INCLUDING PRIMARY, SECONDARY, POST-SECONDARY, HOME-SCHOOLING, AND CONTINUING EDUCATION PROGRAMS, STAND TO GAIN INCREDIBLE OPPORTUNITIES. HIGH SPEED CONNECTIVITY OFFERS THE PROMISE OF REMOTE CLASS INSTRUCTION, SHARED COURSE OFFERINGS, AND TEACHERS AND ADMINISTRATORS NETWORKING WITH PEERS.”*

### **Modernize broadband infrastructure to support 21st century teaching and learning**

Through the FCC’s E-rate program, 97% of American schools now have Internet access. But as technology changes, so do schools’ needs. Programs like E-rate have to be continuously monitored and updated to help education keep up with student needs, and ensure that E-rate’s funding can keep up with inflation.

### **Expand access to broadband with common sense reforms**

Communities are best served when schools and libraries leverage their technology resources. Wireless educational options that can serve students wherever they are and giving schools and libraries the choice to purchase their area’s low-cost broadband option are changes to E-rate that the FCC’s plan recommends. Giving schools the option of opening up access to their networks after regular school hours for programs like continuing education will enable more Missouri residents to be served without an additional cost.



<http://transform.mo.gov/broadband/>

## Improve access to high-quality, online instruction

Teachers and students will benefit from high quality online learning solutions. Advancements in online learning require research and development of online learning systems including creating online course material and ways to share it (such as making it easier to share materials across different districts). It is widely held that many students learn best when instruction is personalized to meet their individual learning needs, and online learning can help teachers provide this.

### IN THEIR OWN WORDS ...

*Current limitations include the ability to only test 6 people at a time for proposed online state standardized testing.*

— Morgan County R-II Public School District

## Unlock the hidden power of educational data

To make properly informed decisions that will improve education, all stakeholders -- teachers, parents, schools and government agencies at all levels -- need to be able to quickly access correct, current educational data. Broadband will put the data teachers need to help students succeed at their fingertips. With proper privacy protections, sharing data provides parents with valuable information about their child's scholastic progress and promotes home-school partnerships.

### How can Broadband Transform Education in my area?

Several other factors need to be considered along with implementing broadband technology. Are the right tools in place for teachers and students to leverage broadband? Do current processes and procedures allow enough room for use of broadband? Is everyone properly trained to use the technology effectively?

### QUESTIONS TO CONSIDER ABOUT EDUCATION AND BROADBAND

1. Are the right tools in place for teachers and students to leverage broadband? If yes, what tools are in place? If not, what hardware, software and other equipment do you need? Can you provide examples of how it would improve today's education?
2. Do current processes and procedures encourage the use of broadband? What could you do differently with broadband that would promote its use in education?
3. Is everyone properly trained to use broadband technology effectively? How can we better prepare teachers and students to utilize broadband to its maximum benefit?
4. Does broadband access and availability meet minimum standards for effective online instruction? If yes, how? If not, what are the locations that need broadband enhancements and the challenges in getting it there?
5. Is broadband technology cost prohibitive? If so, what are some cost-saving measures that could be implemented to increase use?

*"TODAY'S EDUCATORS ARE HELPING STUDENTS OF ALL AGES BECOME TOMORROW'S HIGHLY SKILLED LEADERS AND CRITICAL THINKERS. BUT THEY ARE DOING SO IN THE FACE OF SOME ENORMOUS CHALLENGES, INCLUDING AN EXPONENTIAL INCREASE IN INFORMATION, A 'DIGITAL DIVIDE' THAT THREATENS TO LEAVE LOW-INCOME STUDENTS BEHIND, AND THE ABILITY TO DELIVER WORLD-CLASS EDUCATION IN RURAL AND CASH-STRAPPED SCHOOLS."*

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One approved project involves the United Electric Cooperative. As part of their system construction, UEC will add additional fiber strands to create a dedicated 1 gigabit education network, increasing broadband access for Missouri rural school systems and libraries. The Cooperative Network for Rural Education Advancement (CnREA) will expand access to advanced education options through video and networked resources.

*MoBroadbandNow* can provide education, awareness, and facilitate communication of funding opportunities for education.

But, we also need to have a fuller understanding of how education entities would like to use broadband, and what are the barriers and challenges to integration?

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How can Broadband Transform Education in my area?

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# Transforming Tourism



*TOURISM BUSINESSES CREATE JOBS FOR THOUSANDS OF MISSOURI RESIDENTS AND REVITALIZE COMMUNITIES. THE TOURISM AND HOSPITALITY INDUSTRY PUMPS MILLIONS INTO THE ECONOMIES OF LOCAL COMMUNITIES AND THE STATE OF MISSOURI. BUSINESSES CAN LEVERAGE BROADBAND TO ATTRACT NEW VISITORS, TRAIN EMPLOYEES AND MARKET THEIR PRODUCTS OR SERVICES IN A WAY THAT MAKES SIZE AND LOCATION LESS RELEVANT THAN EVER BEFORE.*



## TRANSFORMING TOURISM IN MISSOURI

High-speed connectivity, or broadband, is increasingly becoming essential for tourist destinations and businesses in the tourism and hospitality industry. Travelers may seek out distant locales to ‘get away from it all’ but they still want or need to be somewhat connected to the rest of the world.

Missouri, with numerous destinations and activities for tourists, has a vested interest in ensuring their tourism and hospitality industry is equipped to handle the changing needs of today’s traveler.

From amusement parks to museums, from collegiate and professional sports teams to state parks, fishing and hunting, the ‘Show Me State’ is full of sites attractive to tourists both from around the state, country and even the world.

Increasingly, travelers are planning trips and making reservations online. Booking online is usually cheaper without the added commission and cost of a travel agency, and there are some great deals to be found on transportation and lodging. If your property or business is not found online, it’s likely invisible to all but regularly returning clients. In order to create a presence, it’s great to be

found in local, regional and national travel guides, but even so people will want to book online, meaning you still need a high speed connection.

## FEDERAL COMMUNICATIONS COMMISSION (FCC) NATIONAL BROADBAND PLAN

The FCC’s National Broadband Plan includes goals for our economic development, including the tourism and hospitality industry. These goals serve as a starting point for regional discussions about the best way to deliver and use broadband technology to transform tourism across the state. The Plan’s recommendations include:

***Give tourism businesses and their employees the broadband training they need to remain competitive in the global economy***

Small businesses, including local tourism establishments across the state of Missouri, account for a majority of the more than 1.2 million new jobs generated by the growth of the Internet during the last 10 to 15 years. The Small Business Administration and the FCC’s Office of Communications Business Opportunities should work

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together with leading private communications and technology firms to provide tools and training -- applying proven ideas and practices in the digital economy.

***Keep communities dependent on tourism competitive and innovative in the 21st century economy by putting broadband at the forefront of regional development***

Communities without broadband technology will be left behind -- on the outside looking in at the digital revolution. Broadband technology allows regions and communities to compete globally -- attracting new firms, investments and jobs. Local economic development plans and federal programs must take this into account when assessing the economic prospects of a community.

***How can Broadband Transform Tourism in my area?***

Several other factors need to be considered along with implementing broadband technology. Are the right tools in place for tourism to leverage broadband? Do current processes and procedures allow enough room for use of broadband? Is everyone properly trained to use the technology effectively?

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*MoBroadbandNow* can provide education, awareness, and facilitate communication of funding opportunities for tourism.

But, we also need to more fully understand how the tourism and hospitality industry would like to use broadband, and what are the barriers and challenges to integration?

Please share your stories with us at: <http://transform.mo.gov/broadband/>

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**IN THEIR OWN WORDS ...**

*We have had visitors and residents complain about the limited availability of high speed internet, and when they can find limited locations that have high speed Internet, the cost is usually prohibitive. Some of the visitors would like to move here full time—but cannot make that commitment due to the high-speed access they require for work.*

— Robert Hoff, VP & Branch Manager, Central Bank of the Lake of the Ozarks

**QUESTIONS TO CONSIDER ABOUT TOURISM AND BROADBAND**

1. Are the right tools in place for the tourism and hospitality industry to leverage broadband? If yes, what tools are in place? If not, what hardware, software and other equipment do you need? Can you provide examples of how it would improve today's tourism and hospitality industry?
2. Do current processes and procedures encourage the use of broadband? What could you do differently with broadband that would promote its use in the tourism and hospitality industry?
3. Is everyone properly trained to use broadband technology effectively? How can we better prepare the tourism and hospitality workforce to utilize broadband to its maximum benefit?
4. Does broadband access and availability meet minimum standards for effective use by both destination locations and tourists? If yes, how? If not, what are the locations that need broadband enhancements and the challenges in getting it there?
5. Is broadband technology cost prohibitive? If so, what are some cost-saving measures that could be implemented to increase use?

## **SECTION 3**

# **How-To Materials and Sample Surveys**

**RESIDENTIAL SURVEY BUSINESS**

**WEB-BASED SURVEY**

**FOCUSED DISCUSSION GUIDE**

**FOCUSED DISCUSSION SAMPLE SCRIPT & QUESTIONS**

**BROADBAND STRATEGIC PLANNING PURPOSE AND PROCESS**

**PERFORMANCE OF A BROADBAND STRENGTHS, WEAKNESSES,**

**OPPORTUNITIES AND CHALLENGES (SWOC) ANALYSIS**

# NOTES

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**Missouri Broadband RTPT Planning Initiative**



Survey on Residential Broadband/High Speed Internet

Dear Mid-Missouri Resident:  
Our regional planning commission (RPC) is working with the State of Missouri to better understand broadband, or high-speed Internet, needs and to create a strategic plan to meet these needs. As part of this process, we are gathering information from residents about their Internet use. Please have a person in the household who is 18 years or older and makes, or equally shares in, household decisions about computers and the Internet, complete the survey. **Use the enclosed envelope to return the survey by January 24, 2011. Your responses will remain anonymous and will only be reported as part of a larger group.** If you have any questions, please contact the Mid-MO RPC, via phone (573) 657-9779 or by e-mail, mmrpc@mmrpc.org.

ACCESS TO COMPUTERS AND THE INTERNET

1. Do you own a computer in the home? ☐ Yes ☐ No  
If Yes, how many years have you had a computer in the home?  
☐ Less than 1yr ☐ 1-3 yrs ☐ 4-7 yrs ☐ 8-10 yrs ☐ More than 10 yrs ☐ Don't Know
- 1a. Please indicate the technologies that you own and how you use that technology.  
☐ A desktop computer How many? \_\_\_\_\_  
☐ A laptop or other portable computer (e.g. iPad, netbook, mini PC) How many? \_\_\_\_\_  
Does your laptop or other portable computer have wireless Internet capability? ☐ Yes ☐ No  
☐ A cell phone If you own a cell phone, did you use your cell phone in the last 7 days for...(Check all that apply)  
☐ Web browsing ☐ E-mail ☐ Text Messaging ☐ Listening to music ☐ Camera ☐ Video  
☐ I own another device(s) that I use to access the Internet.  
Identify your other device(s): \_\_\_\_\_
- 1b. If you did not indicate that you have a computer, please check all the reasons that apply for not purchasing a computer. (Check all that apply, then go to Question 6 on back)  
☐ I don't have one now, but plan to purchase one within the year  
☐ Cost / too expensive ☐ Don't know how to use a computer ☐ Sufficient access to computers  
☐ My cell phone is all I need ☐ Safety / security concerns ☐ Don't want one  
☐ Don't know how to choose one ☐ Don't have time to use one at home ☐ Don't need one  
☐ Don't have time to learn how to use one ☐ Don't know how to set it up ☐ Don't want kids to use it  
☐ Worried about computer safety (viruses, worms) ☐ Privacy/security/personal information concerns  
☐ Other (specify) \_\_\_\_\_ ☐ Don't Know
2. Do you have Internet access at home? ☐ Yes ☐ No (Go to Question 4b)  
Who uses the computer or Internet at your house? (Check all that apply)  
☐ I do ☐ Spouse/Partner ☐ Children ☐ Sibling ☐ Friend ☐ Grandparent  
☐ Parent ☐ Housemate or roommate ☐ Other \_\_\_\_\_
3. What type of connection do you use at home to access the Internet? (Check all that apply)  
☐ Dial-up (Go to Question 4) ☐ Cable modem ☐ Satellite Internet service ☐ Cellular Broadband (air card)  
☐ DSL ☐ Fixed Wireless ☐ Other (specify) \_\_\_\_\_ ☐ Don't Know
- 3a. How long have you had any type of broadband or high-speed Internet service in your home?  
☐ Less than 1 yr ☐ 1-3 yrs ☐ 4-7 yrs ☐ 8-10 yrs ☐ More than 10 yrs ☐ Don't Know ☐ Not applicable
4. Why did you choose this connection type and service provider?  
☐ Cost ☐ Speed ☐ Only available service ☐ Best available reliability
- 4a. What company provides your Internet service? \_\_\_\_\_ How much do you pay per month for service? \_\_\_\_\_
- 4b. If you indicated you DO NOT have Internet service, please check all the reasons for not having Internet service. (Check all that apply, then go to Question 6)  
☐ I plan to establish Internet service within the next year ☐ I don't own a computer  
☐ Cost / too expensive ☐ High-Speed Internet service is not available ☐ Sufficient access elsewhere  
☐ Nothing on the Internet I need ☐ Don't know how to choose a service ☐ Don't know how to use it  
☐ Don't have time to learn how to use the Internet ☐ Don't know how to set it up ☐ Problems with cable access  
☐ Can't get the kind of Internet access I want ☐ Problems with DSL access ☐ Computer safety – viruses, worm  
☐ Privacy/security/personal information (banking, credit card, identity theft) ☐ Don't really know about the Internet  
☐ Inappropriate content/pornography/hate material ☐ Child safety (dangerous strangers)  
☐ (Other specify) \_\_\_\_\_
5. The following are a list of characteristics about your Internet service. Please indicate whether you are "very satisfied" "satisfied" "dissatisfied" or "very dissatisfied" with that aspect of your Internet service. (Circle response)

Service Issue	Very Satisfied	Satisfied	Dissatisfied	Very Dissatisfied	Don't Know/NA
Speed of the on-line connection	1	2	3	4	5
Cost of Internet service	1	2	3	4	5
Reliable access to the Internet	1	2	3	4	5
Ease of use	1	2	3	4	5
Customer Service Reps' knowledge when you call for service	1	2	3	4	5
Number of providers in your area to choose from	1	2	3	4	5

6.

Do you use the Internet anywhere else other than home?

☐ Yes☐ No

Please indicate other places that you might use the Internet.

Work?

☐ Yes☐ No

Are you a computer or broadband professional?

☐ Yes☐ No

School?

☐ Yes☐ No

Public Library?

☐ Yes☐ No

A relative or friend’s house or some other home in the community?

☐ Yes☐ No

A retail shop with wireless Internet services?

☐ Yes☐ No

Everywhere (mobile Internet)

☐ Yes☐ No

Other?
7.

Do you have an e-mail address?

☐ Yes☐ No

How often do you use e-mail?

☐ At least once a day☐ Weekly or several times per week☐ Less than once a week
8.

How important is it for **all RESIDENTS** of the State of Missouri to have access to computers and the Internet?

☐ Very important☐ Important☐ Somewhat Important☐ Not at all important☐ Don’t Know
9.

How important is it for you to have **choice** on the following characteristics of broadband service? (Check all that apply)

☐ Cost of service☐ Speed of service☐ Type of service (cable modem, DSL, wireless, etc.)☐ Providers
10.

Do you have any concerns about the region or the State of Missouri working to improve broadband service in your community?

☐ Yes☐ No

Specify concerns:

TYPES OF INTERNET USE

11.

The following is a list of things for which you might use the Internet. Please indicate whether or not you have used the Internet for this purpose in the last 7 days, even if it isn’t very important to you. Keep in mind that this could be on a computer that you have at home, work, school, or some other place. (Circle response)

In the last **7 days** have you used the Internet to...

Visit your state, region or local government’s website	YES	NO	Don’t Know
Look for information about a service or product you are thinking of buying	YES	NO	Don’t Know
Sell something online	YES	NO	Don’t Know
Buy something online	YES	NO	Don’t Know
Do any online banking	YES	NO	Don’t Know
Work from home (telecommuting)	YES	NO	Don’t Know
Operate or support a home-based business	YES	NO	Don’t Know
Look online for information about a job	YES	NO	Don’t Know
Look for information about a place to live	YES	NO	Don’t Know
Look online for news or information about politics	YES	NO	Don’t Know
Look for health or medical information	YES	NO	Don’t Know
Take a class or do homework	YES	NO	Don’t Know
Keep in touch with family and friends	YES	NO	Don’t Know
Use an online social networking site like Facebook or LinkedIn	YES	NO	Don’t Know
Share something online that you created yourself	YES	NO	Don’t Know
Contribute to a website, blog or other online forum	YES	NO	Don’t Know
Play online video games	YES	NO	Don’t Know
Watch television or other videos	YES	NO	Don’t Know

DEMOGRAPHICS

- While your responses will remain anonymous, to know that we have a representative sample please respond to the following:

12.

Zip Code: County:

13.

Own or Rent

14.

How long have you lived in your community?

15.

Do you live in a rural area?

☐ Yes☐ No

16.

How old were you on your last birthday?

17.

Male or Female

18.

Do you have children in the home?

☐ Yes☐ No

19.

Highest Grade Completed

20.

Estimated Annual Household Income?

21.

Race/Ethnicity?

22.

Employment status:

☐ Employed full time☐ Employed part time☐ Seeking Employment☐ Retired☐ Unable to work

23.

If you have any additional comments about broadband services in the State of Missouri please include them here:





## Mid-Missouri Regional Business Broadband Survey

The Mid-Missouri Regional Planning Commission (RPC) and the State of Missouri's Office of Administration are conducting this survey to determine the broadband usage, needs and interests of local businesses. Broadband is typically defined as a service that enables high-speed Internet access and high-capacity data communications as opposed to low speed services such as dial-up connections. The results of the survey will be used to help the Mid-MO region gain a better understanding of broadband availability and adoption and how these lend themselves to economic opportunity.

Please take a few minutes to let us know if and how you currently utilize broadband services and what impact broadband has on your business. The survey should be completed by February 15, 2011 to be included in the strategic planning process for the region. If you have any questions, please contact the Mid-MO RPC, via phone (573) 657-9779 or by e-mail, [mmrpc@mmrpc.org](mailto:mmrpc@mmrpc.org). Thank you for your assistance!

1. Name of your business: \_\_\_\_\_

2. Which department do you work in? \_\_\_\_\_

3. Number of employees at your location:

- ☐ 1 to 4
- ☐ 5 to 25
- ☐ 26 to 100
- ☐ 101 to 500
- ☐ 501 to 750
- ☐ 751 or more

4. Please tell us where your business is located.

Address: \_\_\_\_\_

City, State, Zip: \_\_\_\_\_

5. What Missouri county is your business located in? \_\_\_\_\_

6. E-mail address: \_\_\_\_\_

7. Name of person responding to this survey: \_\_\_\_\_
8. Title of person responding to survey: \_\_\_\_\_
9. Your business website address: \_\_\_\_\_
10. Briefly describe what your business does: \_\_\_\_\_
- 

11. Indicate what national business classification best describes your business:

- ☐ Accommodation and Food Services
- ☐ Administrative and Support Services
- ☐ Agriculture, Forestry, Fishing and Hunting
- ☐ Arts, Entertainment and Recreation
- ☐ Construction
- ☐ Educational Services
- ☐ Finance and Insurance
- ☐ Health Care and Social Assistance
- ☐ Information
- ☐ Management of Companies and Enterprises
- ☐ Manufacturing
- ☐ Mining, Quarrying, and Oil and Gas Extraction
- ☐ Professional, Scientific and Technical Services
- ☐ Public Administration
- ☐ Real Estate and Rental and Leasing
- ☐ Retail Trade
- ☐ Transportation and Warehousing
- ☐ Utilities
- ☐ Waste Management and Remediation Services
- ☐ Wholesale Trade

Other (please specify): \_\_\_\_\_

12. Is your business a satellite office?

- ☐ YES
- ☐ NO

If YES, where is your central office? \_\_\_\_\_

13. Does your business have satellite offices?

- ☐ YES
- ☐ NO

If YES, what are the locations of your satellite offices? \_\_\_\_\_

14. Do you have Internet service at your business?

- ☐ YES **(go to question 17)**
- ☐ NO

15. Please check all the reasons for not having Internet service at your business:

- ☐ Internet service isn't available
- ☐ I'm not comfortable using the Internet.
- ☐ My business doesn't need Internet service.
- ☐ I don't know how to use the Internet.
- ☐ Another company supports my Internet service needs.
- ☐ Internet service is too expensive.
- ☐ I don't have a computer at my business.

Other (please specify): \_\_\_\_\_

16. Do you plan to establish Internet service?

- ☐ YES
- ☐ NO

If YES, when? \_\_\_\_\_

**Businesses without Internet service go to question 32.**

17. Who currently provides your business's local data communications, Internet service and connections? \_\_\_\_\_

18. What type(s) of Internet connection do you have?

- ☐ Dial-up Line - 56 Kbps or Less (**go to question 21**)
- ☐ Satellite Broadband
- ☐ Fiber to the Premises
- ☐ DSL
- ☐ Fixed Wireless
- ☐ Cable Modem
- ☐ Mobile Wireless (Cellular Aircard)
- ☐ Frame Relay/Fractional T-1 (i.e., CIR)
- ☐ T-1

Other (please specify): \_\_\_\_\_

19. For all the types of connections you have, indicate the speed of your connection(s). If you know you have the connection, but aren't sure of the speed, just indicate "don't know speed."

Type of Connection	Speed
Satellite Broadband	
DSL	
Cable Modem	
Frame Relay/Fractional T-1 (i.e., CIR)	
Other (Indicate type and speed)	
Satellite Broadband	
DSL	
Cable Modem	
Frame Relay/Fractional T-1 (i.e., CIR)	
Other (Indicate type and speed)	

20. What year did you first establish broadband, or high-speed Internet service, at your business? \_\_\_\_\_

**Businesses with broadband skip to question 23.**

21. Why haven't you adopted broadband, or high-speed Internet service? (check all that apply).

- ☐ Not available.
- ☐ Don't need high-speed Internet
- ☐ Too expensive.
- ☐ Don't know why we haven't adopted broadband.

22. Do you plan to adopt broadband (high-speed Internet) service?

- ☐ YES
- ☐ NO

If YES, when? \_\_\_\_\_

23. Please rate the following aspects of your services by checking the appropriate column.

	Very Satisfied	Satisfied	Dissatisfied	Very Dissatisfied	Don't Know/Not Applicable
Cost of Internet/network service					
Speed of the on-line connection					
Billing practices of your provider					
Training and technical support					
Customer Service Representative's knowledge when you call for help					
Installation technician's ability and courteousness					

24. In the last 30 days, indicate which applications your data communications/Internet Access connection has supported (check all that apply):

- ☐ E-mail
- ☐ Videoconferencing
- ☐ File Sharing
- ☐ E-business
- ☐ Website applications
- ☐ Business to business functions
- ☐ On-line education
- ☐ Banking
- ☐ Monitoring functions
- ☐ Research
- ☐ On-line appointments
- ☐ On-line customer support

Other: \_\_\_\_\_

25. How important is a robust broadband (high-speed Internet access) connection to the day to day operations of your business (check one)?

- ☐ Very Important
- ☐ Important
- ☐ Somewhat Important
- ☐ Not at All Important

26. Why is a broadband connection important to you at your location?

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27. Would it be beneficial to you if the broadband environment in your area was enhanced?

- ☐ YES
- ☐ NO

If YES, when? \_\_\_\_\_

28. Do you have any thoughts about how to go about enhancing broadband availability in your region? \_\_\_\_\_

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29. When you sought broadband services for your business at your location, how would you describe the availability of multiple, competing broadband options:

- ☐ Competitive, several options
- ☐ Somewhat Competitive, two providers
- ☐ Not Competitive at All, only one provider option
- ☐ There is not a broadband option available that is suitable for my business.

30. What do you currently pay each month for this service? (If you have indicated several services above, indicate your total expense for these services.)

- ☐ Less than \$50
- ☐ More than \$50 and less than \$100
- ☐ Between \$100 and \$200
- ☐ Between \$200 and \$300
- ☐ More than \$300 per month
- ☐ Don't know how much we pay.

Other (please specify): \_\_\_\_\_

31. What is the term of your service contract(s)? \_\_\_\_\_

32. Do you have any other comments about broadband service availability in your region?

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The Mid-Missouri Regional Planning Commission and the State of Missouri appreciate your cooperation in completing this survey. If you have any questions, please contact the Mid-MO RPC, via phone (573) 657-9779 or by e-mail, [mmrpc@mmrpc.org](mailto:mmrpc@mmrpc.org).



# Focused Discussion Guide

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## Missouri Broadband RTPT Planning Initiative

### **Gathering Information and Ideas about Broadband from your Sector**

After the initial broadband workshop, each member of the RTPT will be asked to gather information from the sector they represent and bring that information back to the team. Each sector has an information sheet that provides an overview of the key issues surrounding broadband for that sector and includes a series of questions to prompt team members in conversations with others about strategic planning for broadband in their area.

We recommend that each RTPT conduct focus discussions about broadband with representatives from the sectors. Focus groups or discussions are a powerful means to gather feedback and test new ideas. Basically, focus groups are interviews, but with 6-10 people at the same time in the same group.

### **Preparing for the Session**

1. Select a location that allows for a full and vibrant conversation. Plan on the discussion running 60-90 minutes.
2. Call and/or e-mail potential members from your sector to invite them to the meeting. Send them a follow-up invitation with a session time and a copy of the sector sheets provided to you. Plan to provide a summary of the comments gathered during the session and let them know you will do this.
3. About three days before the session, call and e-mail each member to remind them to attend.
4. Plan to record the session with either an audio or audio-video recorder. Don't count on your memory. If this isn't practical, involve a co-facilitator who is there to take notes.
5. Refreshments are always helpful and appreciated.

### **Asking Questions**

1. Using the questions provided remind participants that there are no “right or wrong” answers, we want them to provide their thinking and perspective on the topic.
2. Try to summarize what you hear them saying, back to them. This is called “mirroring” and ensures that you have captured their thoughts correctly.
3. Ensure even participation. If one or two people are dominating the meeting, call on others. Consider using a round- table approach, including going in one direction around the table, giving each person a minute to answer the question.
4. When you hear the same theme being repeated, you’ve reached “redundancy” and can move to the next question. Having someone else in the group keep you on time is also helpful in ensuring that you are able to ask each of the questions you have planned.
5. At the close of the session, be sure to ask if there is “anything else” someone would like to add to the discussion. This is an insurance question that ensures ideas have not been left off the table.

### **Sharing the Results**

1. After the session, verify your recording worked.
2. Review the tapes and your notes and create a series of bullet points under each question posed that captures the redundant ideas you heard in the sessions. Be sure to highlight any “good” ideas even if they were only said by one or two participants that you would like members of the RTPT to consider.
3. E-mail these notes in advance of the next workshop to your RTPT staff support person.

### **Tips for Engaging Your Sector in a Broadband Discussion**

Working with our pilots, several RTPT members are taking different approaches to reach out to their groups. The following is a list of some strategies you might want to consider:

- a. **Use an existing meeting and request “broadband needs” be part of the discussion.**  
If you have a standing meeting with members that represent the sector in your region, ask if a broadband discussion can be added to the agenda. Pose the questions on your sector sheet to the group and capture the themes that people express. Share these notes with the RTPT.
- b. **Send an email to an active listserv you participate in with the key broadband questions and attach your “sector” background sheet.** We’ve heard from RTPT members that are using email to gather input on broadband. Using the sector sheets provided in the toolkit, the RTPT member sends an email and then as responses are returned creates a master document for the RTPT group to use in planning.
- c. **Host a forum on broadband (serve refreshments for good attendance!).** Several RTPT members are hosting a meeting on broadband with members from the sector and using the sector sheets and the key questions to have a focused discussion about broadband and community needs.
- d. **Arrange a conference call.** Members of RTPT teams are arranging a conference call and circulating the sector sheet and the questions in advance of the call so that people dial-in ready to talk about broadband.

### **Brainstorm:**

**What other ways might you engage your sector to provide feedback in a timely and efficient way?**

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# Focused Discussion

## Sample Script & Questions

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### Missouri Broadband RTPT Planning Initiative

Information in italics is meant to guide the moderator and not meant to be asked out loud. During the conversation it might be best to assign someone to keep notes and keep you on time. The timing for each question indicated below is an estimate for a 60 minute conversation. If you are having a vibrant conversation, you should continue until you feel the group has shared all they need to on the topic. The note taker should capture the larger themes that are mentioned by several participants and provide specific examples to illustrate the point whenever possible.

Two additional resources are suggested that you may want to use with the group. First, a sheet listing only the questions is available at the end of this part of the toolkit. A PDF and/or Microsoft Word version of the questions will be made available to you to send to your group ahead of time to allow them time to think about their responses before the meeting. Second, use the Broadband 101/Terms Sheet to send to them so that they can familiarize themselves with some of the terms they may hear at the meeting (a PDF of this document will be made available to you also).

**Estimated length:** 60 minutes with 7-10 participants, 90 minutes with 11-20 participants.

#### **Introduction (5 minutes)**

The purpose of this discussion is to learn about our SECTOR NAME community's needs and interests related to broadband, or high-speed Internet access. There is no right or wrong answer to the questions being posed. Our regional conversation today is part of a statewide effort that coincides with a national effort to increase access to high-speed Internet services in Missouri and throughout the United States.

The Missouri Office of Administration launched *MoBroadbandNow* in 2009. This five-year initiative coordinates efforts to obtain funding from the U.S. Department of Agriculture and the U.S. Department of Commerce specifically set aside for broadband expansion.

*MoBroadbandNow* seeks to expand broadband accessibility to 95 percent of the total population, a significant increase from the current projected accessibility of 79.7 percent.

In order to do that, we are engaging in an effort to identify broadband needs at the local level. Today, we simply want to find out the attitudes, opinions, needs and interests of stakeholders in the SECTOR NAME community related to broadband availability and adoption. The thoughts of this group will be shared with the INSERT REGION NAME Regional Technology Planning Team (RTPT) tasked with considering ways, and crafting a strategic plan, to create broadband opportunities and address the needs of our region.

Are there any questions about the goals of this conversation today?

### **Introductory Question (5 minutes)**

First, I'd like to go around the room, have you introduce yourself, your organization and then tell us how you use the Internet or other network services at your organization.

*Capture specific applications being used and who the key broadband providers to your sector are.*

### **Key Question (10 minutes)**

Let's think about the work that you have done over the last year. Were there instances when your internet or broadband service or internet service provider made all the difference in whether those projects were successful or not?

*Identify key traits of the broadband service that provide "successful" experiences.*

### **Key Question (15 minutes)**

I want to switch gears now and talk about the times when you haven't had enough broadband availability, or there have been other issues surrounding broadband, that have caused problems in completing a project or making a connection that was needed. Have you attempted and then failed at recent initiatives, or simply weren't able to participate or launch a program or service, because you didn't have enough broadband service, capacity or other related features to launch the program or service with confidence?

*Probe for specifics and attempt to place these findings in relation to pragmatics of launching or enhancing broadband service in the area, such as **where** broadband access might be needed and **who** needs to adopt broadband for the participant's program or service to be successful. If cost was the issue, what is the "right" price? Other issues that might arise are a trained workforce, equipment needs (like computers) or concerns about security of the Internet. Try to engage the participant to be specific.*

*If you have not heard specific applications as a result of the previous two questions, pose the follow-up question. If you have heard specific applications, move to the next Key Question.*

### **Follow-up Question (5 minutes)**

What are the key applications or business uses on a day to day basis where your organization needs efficient and reliable broadband services in the INSERT REGION NAME region?

*Create a list of SECTOR related high-speed Internet or broadband network applications that will be critical to support. These may be as simple as email or more complex applications such as secure, shared databases.*

### **Key Question (10 minutes)**

How do you see potential broadband needs in the future related to your organization?

*Explore. Create a list of future needs, probe for clarification when needed.*

### **Key Question (5 minutes)**

I want to leave here today with an understanding of how important this issue is to your SECTOR in the INSERT REGION NAME region? If you were creating a list of priorities for the INSERT REGION NAME region, where would you rank addressing the problem of broadband capacity? First, fifth, tenth—not on the list?

*As they assign a number, ask the participant what issues are above it and what are below it? Probe to better understand where broadband is on the list of priorities.*

### **Insurance Question (5 minutes)**

Before we close ...is there anything else that you would like to say about broadband, or high-speed Internet service in the INSERT REGION NAME region?

*Go around the room to ensure that everyone has had a chance to speak on the topic.*

Thank you for the discussion today. These results will be shared with the INSERT REGION NAME Regional Technology Planning Team and is part of a broad effort to understand broadband needs in our area. Once we have gathered information from the all of the key stakeholders on this issue in the region, we will draft a strategic plan to address our local needs. We are anticipating this process to be completed in the next 18-months and together these strategic plans will help the State of Missouri meet its overall mission to bring robust broadband access to all areas of our State.

## QUESTIONS FOR FOCUSED DISCUSSION

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How do you use the Internet or other network services at your organization?

Thinking about the work that you have done over the last year, were there instances when your internet or broadband service or internet service provider made all the difference in whether those projects were successful or not?

Think about the times when you haven't had enough broadband availability, or there have been other issues surrounding broadband, that have caused problems in completing a project or making a connection that was needed. Have you attempted and then failed at recent initiatives, or simply weren't able to participate or launch a program or service, because you didn't have enough broadband service, capacity or other related features to launch the program or service with confidence?

What are the key applications or business uses on a day to day basis where your organization needs efficient and reliable broadband services in the INSERT REGION NAME region?

How do you see potential broadband needs in the future related to your organization?

How important is this issue to your SECTOR in the INSERT REGION NAME region? If you were creating a list of priorities for the INSERT REGION NAME region, where would you rank addressing the problem of broadband capacity? First, fifth, tenth—not on the list?

Is there anything else that you would like to say about broadband, or high-speed Internet service in the INSERT REGION NAME region?





# Broadband Strategic Planning Purpose and Process

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## Missouri Broadband RTPT Planning Initiative

It is important to note at the start the *purpose* of broadband strategic planning in order to better understand the related process. The broadband strategic planning process is designed to identify strategies, and related directions, initiatives, goals and objectives, that can be employed by interested parties within the Regional Technology Planning Team's (RTPT's) region in the coming months and years to leverage and build upon existing broadband-related strengths to overcome current weaknesses, effectively address current and future challenges and take full advantage of current and future broadband opportunities.

As such, broadband strategic planning is a large scale, high-level planning exercise that provides specific guideposts and pathways to better help the region build long term broadband sustainability concerning both availability (supply) and adoption (demand) for all the constituencies within the region. Consequently, while the broadband strategic plan has specific recommendations for developing initiatives to implement the plan, it, like any strategic plan, is *not* an operational plan. For example, while large scale cost figures will be developed, the plan is not intended to detail, specific cost/benefit analyses for particular technical broadband system components or enhancements.

The Strategic Planning process to accomplish the purpose discussed above is typically split into four (4) phases:

- **Phase 1:** Needs Assessment and Existing Information Review
- **Phase 2:** Second Meeting and Planning Activities with the RTPT members
- **Phase 3:** Findings and Initial Strategic Plan Element Development
- **Phase 4:** Drafting and Finalization of the Strategic Plan

**Phase 1: Needs Assessment and Existing Information Review** – In the first phase it will be important to understand the current broadband climate in the region. This will both help develop an understanding of the broadband-related strengths and weaknesses in the region and provide a baseline for future evaluation of progress.

The RTPTs must also understand and evaluate the existing publically available maps of the providers and services offered in their areas. This will further provide the RTPTs with knowledge of areas that either do not have any broadband or where broadband coverage is insufficient.

**Phase 2: Second Meeting and Planning Activities with the RTPT members** – In the subsequent full RTPT meeting, there will need to be significant discussion about moving from the current broadband environment to the one needed within the region. Based on these discussions and available baseline data, a Strengths, Weaknesses, Opportunities and Challenges (SWOC) analysis will need to be performed. This analysis will cover a wide range of issues including those centered on: residential, business and institutional broadband availability and adoption, whether available bandwidth(s) are sufficient for current as well as near and long term needs and applications, potential upgrade and expansion possibilities, reliability of existing networks, and related matters.

Providers will be asked to present their ideas on possibilities for advancing the broadband environment. Best practices will also be discussed from both an availability and demand-spurring perspective, with examples given from within the region, around the State and across the country.

**Phase 3: Findings and Initial Strategic Plan Element Development** – During this phase, the RTPT will review the initial findings, priorities, potential strategic directions and actions, timelines and resources needed related to those potential directions. In this phase, a number of potential strategic directions and initiatives will be identified, reviewed, discussed, and then incorporated into the initial draft of the Strategic Plan.

**Phase 4: Drafting and Finalization of the Strategic Plan** – At this stage, the initial draft of the Strategic Plan will be crafted and reviewed by the RTPT. Typically, the Strategic Plan will consist of the following elements:

1. Introduction, Purpose of Planning Exercise and Regional Overview
2. Key Assessment Findings
  - a. Residential Survey
  - b. Business Survey
  - c. Focused Discussions by Sector
3. Detailed SWOC findings and analysis (using assessment as a guide)
  - a. Strengths of the region and how they relate to MOBroadbandNow goals.
  - b. Weaknesses of the region and how they challenge MOBroadbandNow goals.
  - c. Opportunities identified by the RTPT, how they support MOBroadbandNow goals and how to take advantage of these opportunities.
  - d. Challenges identified by the RTPT and mechanisms needed to addresses these challenges.
4. Strategic Direction(s)
  - Short, medium and long term goals and objectives to boost broadband adoption and availability.
    - Regional policies that roll up into State policies for residential, business and Anchor Institutions encouraging:
      - Availability
      - Adoption
      - Literacy and usage
  - Action Items and Implementation Plan
    - Short and long term

5. Financial, human and organizational resource considerations

6. Timelines and benchmarks for measuring progress:

- Availability goals
- Adoption goals
- Usage goals

Once the RTPT members review and provide comments, the plan will be revised. From there, it will go back to the RTPT for a final review before being issued publically and then being rolled into a compilation plan for the entire State of Missouri. The initial Strategic Planning process is then completed. However, the plan is designed to be a dynamic document and will be updated as progress is made.

# Strengths, Weaknesses, Opportunities and Challenges (SWOC) Analysis

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## Missouri Broadband RTPT Planning Initiative

Broadband Strategic Planning includes significant review and evaluation of the existing and potential broadband environment, including the needs ascertained and all the contributing factors discerned. A critical part of the evaluation is a Strengths, Weaknesses, Opportunity and Challenges (SWOC) analysis. A SWOC analysis is a strategic planning exercise that is, in this case, designed to help identify broadband availability and adoption issues that will be considered high priority for development of strategic directions and initiatives. Once identified, the goal is to develop strategic directions and initiatives that:

- Take full advantage of and leverage the identified strengths
- Improve on weaknesses that are determined
- Seize the opportunities that are identified
- Address the challenges that have been delineated

Before undertaking the SWOC analysis, it is important to understand the elements that create the analysis. The definitions of the four (4) SWOC elements are as follows:

- **Strengths** – Broadband-related systems, practices, processes, and resources that are highly valued by broadband-related stakeholders within the region. For example, the Regional Technology Planning Team (RTPT) may identify areas of strength related to broadband such as the level of coverage throughout the region, high levels of bandwidth or speed, high numbers of providers competing in the region and cost parameters that are highly valued by residential, business and institutional users of broadband.
- **Weaknesses** – Areas that need improvement, reasons why stakeholders are not able to wholeheartedly embrace broadband and areas that tend to compromise the achievement

of high levels of availability and adoption. This focus will work in tandem with identifying strengths, where areas that are not considered strengths may be considered weaknesses. For instance, the level of coverage in the region may be a weakness if it is not considered a strength. This will also be true related to available bandwidth and the cost of broadband service to residential, business and institutional users.

- **Opportunities** – Favorable situations/circumstances not yet taken advantage of that may positively impact the development and acceptance of broadband. These may include proximity of broadband providers' infrastructure to areas where broadband does not exist today. Technologies not currently in place may also provide an opportunity for broadband expansion in the region.
- **Challenges** – Present and future situations/circumstances that may negatively impact broadband development and acceptance as perceived by regional stakeholders. This may include density, geographic, socio-economic and computer/Internet literacy issues facing broadband providers and existing and potential users.

The RTPT members will pursue the SWOC analysis at their second large group meeting, held after the completion of the needs assessment. The SWOC analysis will help provide a solid basis for improving the broadband landscape going forward. For instance, areas of strength may be built upon and opportunities may be pursued to address areas of weakness and the challenges noted. In addition, this process will help focus the RPTP's efforts by providing the basis for prioritization of tasks going forward.

## SECTION 4

# Sample Press Releases

**ANNOUNCEMENT OF FORMATION OF THE RTPT**  
**ANNOUNCEMENT OF THE RESIDENTIAL SURVEY FINDINGS**  
**ANNOUNCEMENT OF COMPLETION OF THE BROADBAND STRATEGIC**  
**PLAN**



# NOTES

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**Missouri Broadband RTPT Planning Initiative**

# RTPT Formation Sample Press Release

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## Missouri Broadband RTPT Planning Initiative

FOR IMMEDIATE RELEASE:

CONTACT: (RPC DIRECTOR CONTACT INFORMATION HERE)

(CITY, MO) – *MoBroadbandNow*, a public/private partnership launched as part of Governor Nixon’s Transform Missouri effort, is asking local communities to come together and work to improve broadband, commonly thought of as high-speed Internet access, around the State.

Through the (RPC NAME) Regional Planning Commission (RPC), a strategic task force known as a Regional Technology Planning Team (RTPT) has been appointed by the RPC and the Missouri State Office of Administration to gather community feedback and to create a strategic broadband plan designed to meet local and regional broadband needs. This 15 member team will work over the next 18 months to develop a strategic plan to implement their solutions and to craft benchmarks for success in the region.

*(QUOTE FROM CHAIR OF REGIONAL TECHNOLOGY PLANNING TEAM OR HEAD OF THE REGIONAL PLANNING COMMISSION. “Our goal is to....”)*

Members of the team represent key interests of the region from areas such as education, business, economic development, healthcare, public safety, local government and our area libraries.

*(INSERT MEMBERSHIP OF THE REGIONAL TECHNOLOGY PLANNING TEAM IF GROUP DESIRES OR AUGMENT THE LIST OF SECTORS REPRESENTED)*

At last count just under 80 percent of Missouri residents had broadband access and the *MoBroadbandNow* initiative is seeking to raise that number to 95 percent before 2014. Residents of Missouri can test whether they have a high-speed Internet connection by visiting a recently launched online speed test at <http://www.speedtest.mobroadbandnow.org>. The data from each test will be aggregated into an interactive map that will ultimately paint a picture of high-speed connectivity throughout Missouri.

A comprehensive study of high-speed Internet needs and interests will be conducted over the next several months. The members of the team have already begun gathering information on broadband use by the sectors they represent. As another part of this effort, a survey of regional

businesses and a study of the region's residential population will be conducted in January 2011.

The *MoBroadbandNow* initiative is funded by the federal American Recovery and Reinvestment Act (ARRA) and helps communities close the gap on high-speed Internet access by putting valuable tools and information in their hands as they work with public and private stakeholders to design solutions.

"These critical broadband goals can be achieved by all of us pitching in to work together for the future of our children, ourselves, and our State," said Commissioner Kelvin Simmons who is leading the statewide initiative. "A collaborative approach is imperative to ensure that these investments, and those in the future, meet the needs of our citizens, businesses, and governments."

Missouri was awarded more than \$275 million in stimulus funds to meet these goals.

###

#### About *MoBroadbandNow*

Citing the pressing need for Missouri citizens and businesses to access information and compete in markets around the globe, efforts to expand high-speed connectivity and broadband access to Missouri residents came together under a state-wide program called *MoBroadbandNow*.

*MoBroadbandNow* (a public/private partnership) is a five-year initiative launched by Gov. Nixon in 2009 and is primarily funded by the 2009 American Recovery & Reinvestment Act (ARRA). *MoBroadbandNow* is charged with creating statewide awareness, mapping, and maintaining the state broadband inventory and conducting planning efforts to expand broadband access from 79.7% to 95%. The broadband initiative is one of several elements of Governor Jay Nixon's larger *Transform Missouri* initiative.

To date, partner grants and loans supported by the State of Missouri and the *MoBroadbandNow* initiative include several for developing a comprehensive broadband map of the state, building **middle-mile** infrastructure for broadband and completing **last-mile** broadband development. Another grant supports a regional **broadband planning** exercise and benchmarking of adoption and availability for residents and business. Additional funds were acquired to create **public computing centers**, which will provide broadband access in public locations, often targeting a specific vulnerable population such as low-income, minority, disabled or unemployed Missourians.

You can learn more about *MoBroadbandNow* by visiting the website at [www.transform.mo.gov](http://www.transform.mo.gov) or follow us on Twitter at @MoBroadbandNow.

# Residential Survey Findings

## Sample Press Release

---

### Missouri Broadband RTPT Planning Initiative

FOR IMMEDIATE RELEASE:

Contact:

Contact Person

Company Name

Telephone Number

Fax Number

Email Address

Web site address

RPC Headquarters City, Mo. – XX% of Missouri residents in RPC AREA report that they do not subscribe to broadband, commonly called high-speed Internet access. This finding is part of a residential study completed by the RPC NAME regional technology planning team in an effort to better understand broadband in our community. The findings of the study, released today, are being used to help the team identify broadband challenges and work to develop a plan over the next year to meet those challenges.

Those without broadband in our region indicated the key reasons for not subscribing are:

XXXXX, XXXX and XXXXX.

Insert quote from Regional Technology Planning Team chair.

“Reaction to data quote.”

Other key findings are:

XX% do subscribe to broadband and most get that service from TYPE OF SERVICE (DSL, Cable, etc.).

The top three online activities engaged in by local residents are XXXX, XXXXX and XXXXX.

XX% also reported owning a laptop and XX% indicated they had a cell phone that allowed them to browse the Internet and read their email.

This study was part of a statewide initiative, *MoBroadbandNow*, launched as part of Governor Nixon’s Transform Missouri effort, is working to improve broadband, commonly thought of as high-speed

Internet access, around the State.

In RPC NAME, a strategic task force was appointed by the Office of Administration to gather community feedback and to create a strategic broadband plan designed to meet local and regional broadband needs. This XX member team will continue working over the next XX months to develop a strategic plan to implement their solutions and to craft benchmarks for success.

At last count just under 80 percent of Missouri residents had broadband accessibility and the *MoBroadbandNow* initiative is seeking to raise that number to 95 percent before 2014.

The *MoBroadbandNow* initiative is funded by the federal American Recovery and Reinvestment Act (ARRA) and helps communities close the gap on high-speed Internet accessibility by putting valuable tools and information in their hands as they work with public and private stakeholders to design solutions. Missouri was awarded more than \$275 million in stimulus funds to meet these goals.

A full copy of the residential study can be found at [www.xxxxx.xxx](http://www.xxxxx.xxx).

# # #

#### About *MoBroadbandNow*

Citing the pressing need for Missouri citizens and businesses to access information and compete in markets around the globe, efforts to expand high-speed connectivity and broadband access to Missouri residents came together under a state-wide program called *MoBroadbandNow*. *MoBroadbandNow* (a public/private partnership) is a five-year initiative launched by Gov. Jay Nixon in 2009 and primarily funded by the 2009 American Recovery & Reinvestment Act (ARRA). *MoBroadbandNow* is charged with creating statewide awareness, mapping, and maintaining the State broadband inventory and conducting planning efforts to expand broadband accessibility from 79.7% to 95%. The broadband initiative is one of several elements of Governor Nixon's larger *Transform Missouri* initiative.

To date, partner applications supported by the State of Missouri and the *MoBroadbandNow* initiative include several for developing a comprehensive broadband map of the State, building **middle-mile** infrastructure to interconnect networks throughout the State and completing **last-mile** broadband development to service residential and business broadband users. Another grant supports a regional broadband planning exercise and benchmarking of availability to, and adoption of broadband by, residents and business. Additional funds were acquired to create **public computing centers**, which will provide broadband access in public locations, often targeting a specific vulnerable population such as low-income, minority, disabled or unemployed Missourians.

You can learn more about *MoBroadbandNow* by visiting the website at [www.transform.mo.gov](http://www.transform.mo.gov) or follow us on Twitter at @MoBroadbandNow.

# Completion of the Regional Broadband Strategic Plan Sample Press Release

---

## Missouri Broadband RTPT Planning Initiative

FOR IMMEDIATE RELEASE:

Contact:  
Contact Person  
Company Name  
Telephone Number  
Fax Number  
Email Address  
Web site address

RPC Headquarters City, Mo. –In RPC NAME, a task force appointed by the Office of Administration last year to gather community feedback and create a strategic broadband, or high-speed Internet access, plan has completed their work. Released today, the plan is designed to leverage public/private partnerships and more than \$275 million dollars in statewide federal funding to meet local and regional broadband needs.

The new plan calls for several broadband goals to be met. These include:

Residential goal  
Education goal  
Economic goal  
Healthcare goal

QUOTE FROM CHAIR OF REGIONAL TECHNOLOGY PLANNING TEAM. “We are proud of what we accomplished and believe we have set the course for improved....”

Members of the team included:

(INSERT MEMBERSHIP OF THE REGIONAL TECHNOLOGY PLANNING TEAM)

At last count just under XX percent of Missouri residents had broadband accessibility and the

*MoBroadbandNow* initiative is seeking to raise that number to 95 percent before 2014.

The *MoBroadbandNow* initiative is funded by the federal American Recovery and Reinvestment Act (ARRA) and helps communities close the gap on high-speed Internet accessibility and adoption by putting valuable tools and information in their hands as they work with public and private stakeholders to design solutions.

“QUOTE TO BE PROVIDED,” said Commissioner Kelvin Simmons who is leading the statewide initiative. “MORE COMPLIMENTS”

In all 19 regional technology planning teams are working to create grassroots plans to resolve high-speed Internet accessibility and adoption issues and Transform Missouri.

# # #

#### About *MoBroadbandNow*

Citing the pressing need for Missouri citizens and businesses to access information and compete in markets around the globe, efforts to expand high-speed connectivity and broadband accessibility to Missouri residents came together under a state-wide program called *MoBroadbandNow*. *MoBroadbandNow* (a public/private partnership) is a five-year initiative launched by Gov. Jay Nixon in 2009 and is primarily funded by the 2009 American Recovery & Reinvestment Act (ARRA). *MoBroadbandNow* is charged with creating statewide awareness, mapping, and maintaining the state broadband inventory and conducting planning efforts to expand broadband accessibility from 79.7% to 95%. The broadband initiative is one of several elements of Governor Nixon’s larger *Transform Missouri* initiative.

To date, partner applications supported by the State of Missouri and the *MoBroadbandNow* initiative include several for developing a comprehensive broadband map of the State, building **middle-mile** infrastructure to interconnect networks throughout the State and completing **last-mile** broadband development to service residential and business broadband users. Another grant supports a regional broadband planning exercise and benchmarking of availability to, and adoption by, residents and business. Additional funds were acquired to create **public computing centers**, which will provide broadband access in public locations, often targeting a specific vulnerable population such as low-income, minority, disabled or unemployed Missourians.

You can learn more about *MoBroadbandNow* by visiting the website at [www.transform.mo.gov](http://www.transform.mo.gov) or follow us on Twitter at @MoBroadbandNow.



## **SECTION 5**

# **Resource Materials and Links**

**BROADBAND PLANNING SITES IN OTHER STATES**  
**LINKS TO FEDERAL AND MISSOURI BROADBAND RELATED DOCUMENTS**  
**COMMISSIONERS' REPORT ON MISSOURI BROADBAND AVAILABILITY**  
**NTIA INTERNET USE REPORT (DIGITAL NATION)**  
**BROADBAND-RELATED INFORMATION FROM MISSOURI AND THE REST**  
**OF THE COUNTRY**

# NOTES

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**Missouri Broadband RTPT Planning Initiative**

# Broadband Planning and Mapping Programs

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## Missouri Broadband RTPT Planning Initiative

### Alabama

Connecting Alabama -- <http://connectingalabama.gov/ca/default.aspx>

### Alaska

Connect Alaska -- <http://www.connectak.org/>

### Arizona

Arizona Government Information Technology Agency -- <http://www.azgita.gov/telecom/>

### Arkansas

Connect Arkansas -- <http://connect-arkansas.org/>

### California

California Broadband Initiative -- <http://www.cio.ca.gov/broadband/>

### Colorado

Connect Colorado -- <http://www.connectcolorado.org/>

### Connecticut

Connecticut Broadband Internet Coordinating Council -- <http://www.ct.gov/cbicc/site/default.asp>

### Florida

Connect Florida -- <http://www.connect-florida.org/>

### Georgia

Georgia Broadband -- <http://www.georgiabroadband.net/>

### Hawaii

Hawaii Broadband Task Force -- <http://www.hbtf.org/>

### Idaho

LinkIDAHO -- <http://linkidaho.org/lid/Default.aspx>

### Illinois

Connect Illinois -- <http://www.connectillinois.org/>

### Indiana

Indiana Office of Technology -- <http://www.in.gov/iot/Broadband.htm>

**Iowa**

Connect Iowa -- <http://connectiowa.org/>

**Kansas**

Connect Kansas -- <http://www.connectkansas.org/>

**Kentucky**

Connect Kentucky -- <http://www.connectkentucky.org/>

**Louisiana**

Louisiana Broadband -- <http://broadband.louisiana.gov/default.asp>

**Maine**

ConnectME -- <http://www.maine.gov/connectme/index.shtml>

**Maryland**

MD Dept. of Business & Economic Development -- <http://broadband.maryland.gov/>

**Massachusetts**

Massachusetts Broadband Institute -- <http://www.massbroadband.org/>

**Michigan**

Connect Michigan -- <http://www.connectmi.org/>

**Minnesota**

Connect Minnesota -- <http://www.connectmn.org/>

**Missouri**

MoBroadbandNow -- <http://transform.mo.gov/broadband/>

**Nevada**

Connect Nevada -- <http://www.connectnv.org/>

**New York**

New York State Broadband -- <http://www.nysbroadband.ny.gov/>

**North Carolina**

Connect North Carolina -- <http://www.e-nc.org>

**Ohio**

Connect Ohio -- <http://www.connectohio.org/>

**Oklahoma**

Oklahoma Broadband Initiative -- <http://www.ok.gov/broadband/>

**Pennsylvania**

New PA Broadband Initiatives -- <http://www.newpa.com/strengthen-your-community/broadband-initiatives/index.aspx>

**Puerto Rico**

Connect Puerto Rico -- <http://www.connectpr.org/>

**Rhode Island**

Office of Economic Recovery & Reinvestment --  
<http://www.recovery.ri.gov/programs/broadband/broadband.php/>

**South Carolina**

Connect South Carolina -- <http://www.connectsc.org/>

**Tennessee**

Connected Tennessee -- <http://www.connectedtennessee.org/>

**Texas**

Connected Texas -- <http://www.connectedtx.org/>

**Utah**

Utah Broadband Mapping, Analysis and Planning Project UBMAPP --  
<http://business.utah.gov/programs/broadband/>

**Vermont**

Vermont Telecommunications Authority -- <http://www.telecomvt.org/>

**Virginia**

Office of Telework Promotion and Broadband Assistance --  
<http://www.wired.virginia.gov/broadband.shtml>

**Washington**

Washington State Broadband -- <http://www.broadband.dis.wa.gov/default.aspx>

**West Virginia**

Connect West Virginia -- <http://www.recovery.wv.gov/Pages/Broadband.aspx>

**Wisconsin**

<http://www.link.wisconsin.gov/lwi/default.aspx>

**Wyoming**

<http://www.linkwyoming.org/lwy/Default.aspx>

## Broadband Resource Links

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### Missouri Broadband RTPT Planning Initiative

The National Broadband Plan: Connecting America

[www.broadband.gov](http://www.broadband.gov)

United States Internet Use and Broadband Adoption

<http://www.internetworldstats.com/am/us.htm>

Missouri Broadband Maps and Data

<http://transform.mo.gov/broadband/maps.php>

American Statistical Association

[http://www.webpages.uidaho.edu/~redgeman/Sampling%20PDF%20Files/fo  
cusgroups.pdf](http://www.webpages.uidaho.edu/~redgeman/Sampling%20PDF%20Files/fo<br/>cusgroups.pdf)

The Substantial Consumer Benefits of Broadband Connectivity for U.S.  
Households,

[http://internetinnovation.org/files/special-  
reports/CONSUMER\\_BENEFITS\\_OF\\_BROADBAND.pdf](http://internetinnovation.org/files/special-<br/>reports/CONSUMER_BENEFITS_OF_BROADBAND.pdf)

Pew Internet and American Life Project

<http://www.pewinternet.org/>

# Commissioners' Report on Missouri Broadband Availability

by

Commissioner Robert M. Clayton III  
Commissioner Steve Gaw  
Missouri Public Service Commission

September 18, 2007

Angie Heffner Robyn, Personal Advisor  
Natelle Dietrich, PSC Telecommunications Staff  
William Voight, PSC Telecommunications Staff  
Dana Parish, Designated Principal Assistant





MISSOURI PUBLIC SERVICE COMMISSION  
FROM THE DESK OF  
COMMISSIONER ROBERT M. CLAYTON III  
COMMISSIONER STEVE GAW

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September 18, 2007

Ms. Colleen Dale, Secretary  
Missouri Public Service Commission  
P.O. Box 360  
Jefferson City, MO 65102

Re: Commissioner's Report on Missouri Broadband Availability

Dear Judge Dale:

Pursuant to §386.130, RSMo. 2000, we tender herewith a Commissioners' Report on Missouri Broadband Availability.

The Report is an analysis and comparison of broadband availability throughout the exchanges of Missouri. The Report confirms that rural Missouri lags behind urban areas in terms of broadband availability and high-speed Internet options. The survey also illustrates the need for enhanced authority for the Commission to gather comprehensive, complete data. Due to technological and regulatory differences among various carriers and our limitations to compel responses, some data cannot be accurately included within the study. Notwithstanding these limitations, these Commissioners have confidence that the Report's suggested trends accurately depict Missouri broadband deployment conditions.

Thank you very much for your assistance.

Very truly yours,



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Robert M. Clayton III  
Commissioner



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Steve Gaw  
Commissioner

Cc: Members of the Missouri Public Service Commission

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## COMMISSIONERS' REPORT

### Executive Summary

This study suggests that statewide wireline broadband deployment has reached 78% in Missouri, while over one in five Missouri households (22% or 1.2 million citizens) continue to lack equitable access to modern telecommunications services at home.

On a state-wide basis, 78% of Missouri households have access to some form of wireline broadband Internet. If the three largest telephone exchange areas of St. Louis, Kansas City and Springfield are removed from the analysis, the percentage of households with wireline broadband access falls to 65%. For exchange areas or communities with less than 25,000 households, wireline broadband deployment falls to 62%, and in exchange areas or communities with less than 15,000 households, wireline broadband deployment drops to 61%. In stark contrast, the level of wireline broadband deployment in the three urban centers is 93%.

The study clearly highlights the fact that urban areas and large cities outpace rural areas in terms of wireline broadband availability. Citizens who live in small towns, who live in the country and certain residents of communities beyond the technical reach of Digital Subscriber Line service (DSL) or cable broadband, lack the same service alternatives and opportunities as those offered in urban areas.

A more in-depth analysis of out-state Missouri suggests that small, rural telecommunications carriers have been more aggressive in offering broadband to customers throughout their service territories than their larger rivals. For example, small, rural telecommunications carriers offer DSL broadband access to 80% of households. These exchange areas have less than 10,000 households. Large telecommunications carriers, including

their local exchange telecommunications competitors, however, have only deployed DSL service to 64% of their exchange service areas, when removing urban centers of St. Louis, Kansas City and Springfield. In exchange areas with less than 25,000 households, large and competitive telecommunications carriers offer broadband access to 60% of households. In exchanges with less than 15,000 households, large and competitive telecommunications carriers offer broadband access to 59% of households.

The Universal Service Fund (USF) may also play a role in calculating broadband deployment. High cost support is available for voice-related telecommunications services in some exchange areas with less than 25,000 households and all but one incumbent local exchange carrier receive some level of support for certain exchange areas in the state (only a few competitive local exchange carriers receive high cost support). In exchange areas where local exchange carriers receive high cost support, DSL broadband is available to 67% of households. In exchange areas where carriers do not receive high cost support, DSL broadband is available to 59% of households, for geographically and demographically comparable areas.

There are 128 exchanges in which no DSL Internet service is available. Among those exchanges, 99 exchange areas are served by large telecommunications carriers while 29 exchange areas are served by small, rural telecommunications carriers. Each of these communities has less than 5,500 households and most have less than 500 households.

Other broadband services are available to compete with telecommunications carriers' DSL service, but it is unclear as to the availability, the quality or the pricing of most of those alternatives. Cable broadband is only available in 267 out of 689 exchange areas, and cable broadband does not reach beyond the borders of towns and cities. Because of incomplete data, it is unclear how many cable broadband connections are present beyond the technical reach of DSL

within the corporate boundaries of a community. Cable broadband is available in 37 exchange areas where there is no DSL service present; however, it is estimated that only 29% of the households within those 37 exchange areas can access the cable broadband service. Wireless service, either through satellite or wireless networks, may prove to be an effective alternative in the future, but it is unclear where the services are available or how the quality or reliability of the service compares to wireline service. Other services like municipal Wi-Fi or Broadband over Power Lines offer great opportunities in the future, but today are either not available or are offered in areas already receiving DSL service.

In conclusion, this survey suggests that 481,800 Missouri families, located primarily in rural areas and small towns, lack the modern tools and conveniences to effectively and meaningfully access the Internet through wireline broadband connections.

## **Background**

No one can dispute that access to the Internet is critically important in today's society. Over the course of its short life, the Internet has revolutionized the way companies do business and the way individuals conduct their personal lives. "Broadband communications are fast becoming the great economic engine of our time," said Commerce Committee Chairman Daniel K. Inouye (D-Hawaii).<sup>1</sup> Consumers use the Internet to collect information on products that they buy and in many cases use electronic commerce to complete their purchases. They conduct research for personal matters, communicate with family and friends far from home, pay their bills and conduct their financial affairs. High school and college students take on-line courses, conduct research, communicate with their classmates and turn in assignments to their professors through the Internet. Professionals complete their continuing education and training obligations

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<sup>1</sup> Statement by the United States Senate Committee on Commerce, Science and Transportation, July 19, 2007.

from home, on-line, without incurring costly travel expense. It is used for new forms of recreation in computer gaming and in access to unlimited varieties of media including music, movies and literature. Consumers have the freedom and privacy, in most cases, to use the Internet to its fullest capacity from the safety and convenience of home.

In addition, the Internet is no longer a luxury, but is absolutely essential. Global businesses are connected via virtual private networks and video-conferencing has replaced expensive international travel. Employees may need the option of telecommuting. As broadband connections become more commonplace, employees are able to connect home computers to corporate Internet networks.

Many companies mandate the use of electronic commerce in distributing billing or statement information. Consumers who choose the “old fashioned” paper copies may be subject to additional fees and expenses. On-line banking may be an efficient and inexpensive alternative, but it may carry mandates to eliminate paper statements and notices. Service providers and retailers have mandated use of electronic communication in e-mail rather than from traditional paper correspondence. Airlines charge extra for purchasing airline tickets through an agent or by phone rather than purchasing on-line. The Internet is no longer a novelty and it is no longer a luxury. Access to the Internet is essential today and will become even more critical in the future.

While first generation Internet Service Providers (ISPs) offered dial up Internet access at speeds no greater than 56 kbps,<sup>2</sup> today's requirements in surfing the web require much greater speeds for even simple tasks like viewing advanced web pages or sending voluminous e-mail. Faster computers and improved technology have made higher processing speeds a possibility.

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<sup>2</sup> In the Matter of Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans (“Deployment of Advanced Telecommunications Capability”) 14 F.C.C.R. 2398, (F.C.C. 1999) at n. 31.

Requirements for even greater speeds accommodate gaming services, work applications, audio and video streaming and other advanced services.

Broadband is the term most often used to describe service that permits use of the Internet at speeds greater than 200 kbps in at least *one* direction. Digital Subscriber Line (DSL) service, usually provided by telecommunications companies through fiber optic cables, copper wires or other connections, has advertised upstream/downstream speeds of approximately 120 kilobits per second to 10 megabits per second. Cable companies provide broadband service through coaxial cable at advertised upstream/downstream speeds ranging from 128 kilobits per second to 8 megabits per second. Fixed and mobile wireless connections can be offered through personal computers, cell phones or personal digital assistants (PDAs) at advertised upstream/downstream speeds of 4 to 54 megabits per second. Some of these services are limited to ranges of 35 to 110 meters from transmission while some services may be available within the entire footprint of a wireless carrier. Lastly, Broadband over Power Lines (BPL) is a fledgling service provided over electrical lines with advertised upstream/downstream speeds ranging from 256 kilobits to 2.7 megabits per second. It is important to remember that while providers typically advertise broadband availability at such speeds, actual experiences are affected by such variables as distance from the transmission source, number of people accessing the service at one time and other factors.

The FCC defines “broadband services” as those services that deliver information at speeds in excess of 200 kbps in at least *one* direction and defines “advanced services” as those services that deliver information at speeds in excess of 200 kbps in *both* directions.<sup>3</sup> In its recent broadband notice of proposed rulemaking (NPRM), the FCC sought comment on whether it

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<sup>3</sup> In the Matter of Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Services to All Americans (“Nationwide Broadband Data”), (WC Docket No. 07-38, released April 16, 2007), at n. 2.



should refine the definitions to expand its understanding of the rapidly evolving broadband marketplace.<sup>4</sup>

Questions have been raised regarding the availability of broadband in the United States and whether certain sectors of the economy lack the modern tools to conduct their business and personal lives in the 21<sup>st</sup> Century. As Federal Communications Commissioner Michael Copps testified before the United States Congress,

Our biggest infrastructure challenge as a nation is bringing broadband to all of our citizens and we're not doing a very good job. Since we last convened, the OECD ranked the United States 15<sup>th</sup> in broadband penetration, down from 12<sup>th</sup> in 2006. But if you don't like that study, there are many others conducted by international organizations, industry associations, think tanks and business analysts that have us at 21<sup>st</sup>, 11<sup>th</sup>, 12<sup>th</sup>, or 24<sup>th</sup>. By any measure, we're getting too little broadband at too high a price.<sup>5</sup>

The Internet is what connects individuals to markets and links economies around the world. No longer can businesses or consumers expect that goods or services will be exchanged at a local level, but rather, will engage commerce on a global scale through high-speed communications systems. Those who do not have access are left behind at a competitive disadvantage. FCC Commissioner Adelstein argued,

[W]e have failed to keep pace with our global competitors over the past few years. Each year, we slip further down the regular rankings of broadband penetration. For Americans in rural areas, low income consumers, and small businesses, the problem can be even more acute. According to the ITU, the digital opportunity afforded to U.S. citizens is 21<sup>st</sup> in the world. While some have protested the international broadband penetration rankings, the fact is the U.S. has dropped year-after-year. This downward trend and the lack of broadband value illustrate the sobering point that when it comes to giving our citizens affordable access to state-of-the-art communications, the U.S. has fallen behind its global competitors.

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<sup>4</sup> *Id.*

<sup>5</sup> Testimony before the United States House of Representatives Committee on Energy and Commerce, July 24, 2007, <<http://www.fcc.gov/ola/testimony.html>>.

There is no doubt about the evidence that citizens of other countries are getting a much greater broadband value in the form of more megabits for less money. This is more than a public relations problem. It is a major productivity problem, and our citizens deserve better.”<sup>6</sup>

As stated by Senator Inouye, “The first step toward securing broadband for all Americans is getting better broadband data.”<sup>7</sup> The FCC attempted to tackle the issue in 2000 by instituting a formal broadband data program through the use of Form 477.<sup>8</sup> All facilities-based providers of high-speed connections are required to report twice a year to the FCC information by zip code and transfer speed. Using this data, the FCC has released several reports on broadband availability, including the most recent report dated June 30, 2006,<sup>9</sup> finding that nationwide, high-speed DSL connections were available to 79% of the households to whom incumbent local exchange carriers (ILECs) could provide local telephone service, and that high-speed cable modem service was available to 93% of the households to whom cable system operators could extend cable TV service. Additionally, the FCC study reported that 99% of all United States zip codes indicate the presence of at least one subscriber who uses a high-speed connection to the Internet.

For Missouri specifically, the study found that 72% of Missouri residential end user premises have access to broadband via telecommunications carriers’ DSL service and 96% of Missouri cable residential end user premises have access to broadband via cable modem, if cable television service is available.<sup>10</sup>

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<sup>6</sup> *Id.*

<sup>7</sup> Statement by the United States Senate Committee on Commerce, Science and Transportation, July 19, 2007.

<sup>8</sup> Nationwide Broadband Data, *id.* n. 3, at ¶3.

<sup>9</sup> *High-Speed Services for Internet Access: Status as of June 30, 2006*. Industry Analysis and Technology Division, Wireline Competition Bureau, January 2007.

<sup>10</sup> *Id.* at table 14.

However, questions have been raised as to the accuracy and relevance of the FCC Study because of flaws in the survey methodology. The Government Accountability Office (GAO) reviewed the strengths and weaknesses of the FCC's broadband data collection methodology in a paper released in May 2006.<sup>11</sup> The report concluded that it remains very difficult to assess the extent of deployment gaps in rural areas of the United States. The FCC's current methodology includes tracking broadband availability by zip code. This methodology has been criticized by the GAO and the Census Bureau as unrepresentative of geographic regions. The GAO further found that the results were skewed toward metropolitan areas. In fact, the Census Bureau implemented its own statistical entity to compensate for weaknesses associated with geographic issues related to zip codes.<sup>12</sup> Concerns with broadband speed and data collection efforts were also relayed by FCC Commissioners to the United States House of Representatives Committee on Energy and Commerce, July 24, 2007.<sup>13</sup>

The FCC's Missouri-specific numbers are also questionable. For instance, the report found that 72% of residential end user premises have access to DSL, yet, according to its underlying tables, only 879,000<sup>14</sup> residential end user lines were reported. The Staff of the Missouri Public Service Commission (Staff) suggests that with 2.19 million Missouri households, the FCC's figure for end user lines would suggest broadband deployment of a paltry 40%. These statistical inconsistencies suggest a need for further study and analysis.

The United States Congress has moved forward with plans to improve data collection on broadband deployment and availability. The Senate Committee on Commerce, Science, and

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<sup>11</sup> *Broadband Deployment Is Extensive throughout the United States, but It Is Difficult to Assess the Extent of Deployment Gaps in Rural Areas* ("Deployment Gaps in Rural Areas"). United States Government Accountability Office, GAO-06-426 (May 2006).

<sup>12</sup> See <<http://www.census.gov/geo/ZCTA/zcta.html>>.

<sup>13</sup> See nn. 5 & 6, *supra*.

<sup>14</sup> This figure represents a combination of end user lines from all broadband sources – DSL, cable, wireless and satellite.

Transportation unanimously approved a bill to improve the quality of federal and state broadband data collection and encourage initiatives that promote broadband deployment. The *Broadband Data Improvement Act* (S. 1492) was introduced by Commerce Committee Chairman Daniel K. Inouye (D-Hawaii) with multiple co-sponsors and it now awaits consideration by the full Senate. This legislation is supported by the National Association of Regulatory Utility Commissioners (NARUC), which encourages further broadband deployment analysis and involvement of state regulatory officials.

Notwithstanding those future efforts by the Congress or other state initiatives, this Report attempts to track the availability of broadband service, defined as 200 kbps and greater in *both* directions, *by household*, throughout telephone exchange areas of Missouri. The Report will discuss the preliminary assumptions made at the start of the study, the scope and plan of acquiring data and will conclude with estimates on state-wide wireline broadband availability as well as by size of community.

Access to high quality, high speed Internet service is absolutely necessary for a 21<sup>st</sup> Century Missouri economy and an important criterion for a high standard of living and high quality of life for our citizens. The results suggest a need for a collaborative process to address the shortcomings of broadband access and a plan of how best to address the inequitable treatment of certain Missouri citizens.

## **Preliminary Assumptions**

### **Broadband Definition**

For purposes of this Report, broadband is defined as a service that offers transmission speeds in excess of 200 kilobits per second in *both* directions. This definition is consistent with

current FCC definitions for “advanced services” and was identified as an appropriate threshold because 200 kbps was four times faster than dial-up Internet access and was enough speed to permit a user to change web pages as fast as one can turn the pages of a book and transmit full motion video.<sup>15</sup> While it is important to note that the FCC is taking comments on the appropriate speed for future studies,<sup>16</sup> this report will focus on speeds which are in excess of 200 kbps in both directions. This definition of speed can be met by service provided in the form of DSL, cable, BPL and some forms of wireless broadband Internet access. These Commissioners believe 200 kbps in today’s environment is inadequate to meet the communications needs of Missouri consumers. The FCC should reevaluate its minimum transmissions speeds in light of increasing requirements of new technologies and applications.

### **Scope of Survey**

Potential broadband providers were asked to respond to a survey, which sought data on broadband availability and subscribership. The survey asked for separate data relating to business or commercial broadband availability as well as specific data on residential availability, subscribership and usage.<sup>17</sup> The Staff made certain assumptions regarding the number of households or businesses within specific exchange areas and requested responses from the survey participants based on those numbers. The companies were asked to provide the following information on an exchange-by-exchange basis:

1. estimated number of residential customers able to order broadband;

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<sup>15</sup> Deployment of Advanced Telecommunications Capability, *id.* n.2 at ¶20.

<sup>16</sup> Commissioners Gaw and Clayton filed comments in response to the FCC’s questions concerning the appropriateness of its definition of broadband. The comments stated that less than ten percent of the providers that responded to the Commissioners’ Missouri-specific survey were unable to offer broadband at transfer speeds greater than 256 kbps. Therefore, the Commissioners encouraged the FCC to set a transfer speed of at least 200 kbps in both directions. Comments of Commissioners Gaw and Clayton. Nationwide Broadband Data, *id.* n.3 (released July 13, 2007).

<sup>17</sup> See Exhibit A (NP version).

2. estimated number of residential customers subscribing to broadband;
3. estimated number of business customers;
4. estimated number of business customers able to order broadband;
5. estimated number of business customers subscribing to broadband;
6. upload/download speeds;
7. price per month for broadband access; and
8. reasons customers may not be subscribing to broadband access.

The questions were designed to evaluate the presence of wireline broadband, by household, when aggregated at the exchange area level.<sup>18</sup> Exchange areas were chosen as the principal block of analysis for several reasons. First, exchange areas are more easily defined geographically and are more familiar to the state regulatory authority. The Commission approves the size and shape of an exchange area and possesses maps which provide a description of the area involved. Further, the telecommunications or cable provider can more easily be identified through its association with an exchange area through Commission records or the community name which identifies the exchange area.<sup>19</sup> Using zip codes may create additional opportunities for inaccuracies in terms of mailing addresses versus physical service location addresses.

While exchange areas were chosen as the means to collect and aggregate the data, it is important to note that broadband data was requested by household within each exchange area in order to identify the availability, or lack thereof, in Missouri. These Commissioners, in

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<sup>18</sup> “An ‘Exchange’ or ‘Exchange area’ is a geographical area for the administration of telecommunications services, established and described by the tariff of a telecommunications company providing basic local telecommunications service; §386.020(16), RSMo. 2005. Telephone exchange areas are geographic areas in which customers can typically complete calls without incurring additional fees or long distance charges.

<sup>19</sup> See Exhibit B; see also <<http://www.mtia.org/resources/map02.html>>, Exhibit C, <[https://secure.ktis.net/missouricable/franchise\\_map.html](https://secure.ktis.net/missouricable/franchise_map.html)>.

comments to the FCC, have asserted that the only way to truly measure broadband deployment is to determine the actual number of households or customers able to access (or not access) particular types of broadband technology, and to compare the total number of households or customers in the study area.<sup>20</sup> There may be merit to aggregating household data on a zip code basis in future studies, which could illustrate interesting trends in certain areas, especially in the case of a larger exchange area with multiple zip codes.

### **Who Participated in the Study**

The survey was sent to fifty-seven (57) telephone companies including all large and small<sup>21</sup> incumbent local exchange carriers (ILECs)<sup>22</sup> and all facilities-based competitive local exchange carriers,<sup>23</sup> including cable companies certificated to offer telecommunications service. Their responses were to be provided by exchange areas.

Surveys were also sent to the Missouri Cable Telecommunications Association to be distributed to cable operators in the state offering cable broadband service. Cable provider data was to be collected on a franchise basis or by an incorporated community basis.

Municipal Internet service offerings were obtained through review of the Commission's December 31, 2006 Report to the General Assembly, *A Study of the Economic Impact of Municipally Owned and/or Operated Cable Television or Telecommunications Systems*,

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<sup>20</sup> Comments of Commissioners Gaw and Clayton. Nationwide Broadband Data, *id.* n. 16.

<sup>21</sup> "Small incumbent local exchange carrier" is defined as a local exchange telecommunications company which serves no more than twenty-five thousand subscriber access lines in the state of Missouri. §392.2304, RSMo. 2005.

<sup>22</sup> "[A] local exchange telecommunications company [is] authorized to provide basic local telecommunications service in a specific geographic area as of December 31, 1995, or a successor in interest to such a company;" §386.020(22), RSMo. 2005.

<sup>23</sup> "Competitive telecommunications company" is a telecommunications company which has been classified as such by the commission pursuant to section 392.361, RSMo; §386.020(9), RSMo. 2005.

made pursuant to Sections 71.970 and 392.410 RSMo 2002.<sup>24</sup> Individual surveys were not sent to municipalities as part of this project because information had been gathered from municipalities within the previous six months.

Electric utilities were contacted to learn whether service known as Broadband over Power Line (BPL) was available anywhere in the state.

Broadband may also be provided by wireless or satellite providers in Missouri, but contact information and jurisdictional issues for these entities made it difficult to solicit survey responses. Wireless broadband service can be offered locally through Wireless Fidelity (Wi-Fi) or over wider areas by Worldwide Interoperability for Microwave Access (WiMax). Another form of wireless service is the type offered by wireless telecommunications carriers over cellular phone networks. Wireless transmissions are affected by such things as weather, terrain and other atmospheric conditions as well as the type of structure of a building.<sup>25</sup> While wireless service may prove in the future to be a reliable broadband option, it was not considered the equal of cable broadband, Digital Subscriber Line (DSL) or other wireline-based services because of reliability concerns.<sup>26</sup>

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<sup>24</sup> See <<http://psc.mo.gov/teleco/Commission%20Draft%20%20HB1402%202006%20Report.pdf>>.

<sup>25</sup> See “Confounded By a Street Lamp,” St. Louis Post-Dispatch (Sept. 5, 2007), <<http://www.stltoday.com/stltoday/news/stories.nsf/editorialcommentary/story/1643150183F767E18625734C0082C6B5?OpenDocument>>.

<sup>26</sup> See Consumer & Governmental Affairs Bureau, “What is Broadband,” <<http://www.fcc.gov/cgb/broadband.html>>. Fixed wireless systems transmit an Internet signal from a local tower which is connected to either a satellite or wire system (Tyson, Jeff, “How Wireless Internet Works,” <[www2.verizon.com/about/community/learningcenter/articles/displayarticle1/0,1727,1087z1,00.html](http://www2.verizon.com/about/community/learningcenter/articles/displayarticle1/0,1727,1087z1,00.html)>). Similar reliability problems that plague wireless phone systems are also present during the exchange of data packets. While mobile wireless systems used by PDAs, cell phones or Internet cards may extend as far as the cell tower coverage area, speeds of such systems decrease over greater distances or in rural areas. Advertised speeds may decrease to 60-80 kpbs outside well-covered urban areas (Verizon Wireless National Access and Enhanced Services Map for Missouri, <<http://www.verizonwireless.com/b2c/CoverageLocatorController?requesttype=newsearch>> and Verizon’s Broadband Access Coverage and Speeds, <<http://b2b.vzw.com/broadband/coveragearea.html>>). There are 20 exchange areas in which wireless Internet services are present with no availability of wireline broadband. Such wireless service may prove to be a cost efficient and reliable system at some point in the future. This Report, however, must focus on the wireline based services which are more effectively measured for reliability.



Further, satellite broadband technology was not considered the equal of wireline-based broadband service because of the reliability concerns, relatively slow upload speeds associated with satellite systems and because of the high price relative to wireline-based services. Any consideration by policy makers to neglect deployment of wireline-based broadband solutions in rural areas of Missouri should take these factors into consideration. Moreover, satellite broadband service may limit or regulate bandwidth for rolling periods of time, or they may even do so permanently. During such periods, customer data transmission speeds are subject to intentional reduction until such time as average speeds or transmitted data decline to predetermined limits, typically set at the time a customer subscribes to the service. Bandwidth regulation may be initiated by service providers for any application, and is particularly applicable in situations involving applications such as web browsing, file transfer, and various streaming applications. Satellite broadband service is typically priced much higher than wired broadband service, with monthly prices as high as \$79.95 for speeds approaching that of typical DSL and cable modem services (price derived from [www.attwb.net](http://www.attwb.net); August 2007). In addition to the high price of satellite broadband monthly charges relative to DSL or cable modem landline broadband charges, satellite broadband offerings typically require extensive up front equipment investments, which should be expected to act as an entry barrier to rural customers.

This study focuses on wireline service as a known quantity in terms of its quality and general reliability.

## **Survey Findings and Results**

### **General Statistics**

It is estimated that there are approximately 2.19 million households in Missouri reflecting a population of 5.6 to 5.8 million Missourians. Those households are located in 689 telephone exchange areas throughout the state. It is further estimated that 1 million of those households are located in what is considered rural parts of the state<sup>27</sup> while the balance of 1.19 million households are located in larger towns or cities.<sup>28</sup>

### **Carrier Responses**

Complete responses were received from all small incumbent local exchange carriers (ILECs). Complete responses were received from the majority of surveyed Competitive Local Exchange Carriers (CLECs). The large ILECs, AT&T, CenturyTel and Embarq, provided information on broadband availability but would not provide information on broadband subscribership. In fact, AT&T, CenturyTel and Embarq initially were reluctant to respond to the survey without assurances as to the potential use of the data. On May 2, 2007, in order to acquire the data without attempting compulsory discovery methods (issuing subpoenas), additional commitments were made to receive the responses that were provided. Specifically, the following written terms were provided by Staff to carriers in order to obtain responses:

There are no plans to make the actual survey results public. However, it should be expected that certain general conclusions will be drawn from survey responses, and those general conclusions will be made public. The following may serve as examples of general statements likely to be drawn from the survey results.

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<sup>27</sup> For purposes of this Report, rural was defined as exchanges with less than 25,000 households and includes all Missouri exchanges except those listed in n. 28, *infra*.

<sup>28</sup> For purposes of this Report, telephone exchange areas referred to as metropolitan, urban or larger town or city are defined as exchange areas with more than 25,000 households including in total the incorporated communities of O'Fallon, St. Charles, Harvester, Manchester, Joplin, Columbia, St. Joseph, Springfield, Kansas City and St. Louis.

- (a) In communities with less than 5,000 residents, X percent of households have access to some form of landline broadband Internet access.
- (b) In “out-state” Missouri, X percent of households have access to some form of landline broadband Internet access.
- (c) In Missouri’s major metropolitan areas, the average upload/download speed is X megabits (or kilobits) per second.
- (d) In Missouri’s major metropolitan areas, X percent of households have access to X broadband providers.
- (e) The average price consumers in Missouri pay for broadband access is \$X.XX per month.
- (f) In Missouri, X percent of telephone exchange areas have [do not have] access to [any] some form of landline broadband access.

Information obtained from the survey results will be kept confidential. Additionally all information made public will be done so in a manner that avoids the possibility of readers being able to obtain confidential information by “back door” methods. For example, if a “cable TV company” reports a certain quantity of broadband customers in an exchange and the “local telephone company” also reports a certain quantity, a concern immediately arises when publishing the total quantity of customers because each competitor may be expected to simply subtract its own customer quantity in order to determine the quantity of its competitor’s customers. Every effort will be undertaken to minimize the potential for obtaining confidential information by such a back-door manner and all confidential information will be kept confidential.<sup>29</sup>

There were a few CLECs that did not respond. However, due to their limited presence in the state, their participation was inconsequential to the overall conclusions of the Report.

Telecommunications carriers reported offering service known as Digital Subscriber Line or DSL. DSL service is provisioned by the use of additional equipment required in the carrier’s access network. Typically, Digital Subscriber Line Access Multiplexers (DSLAMs), routers and other data-related equipment must be installed in the central offices, and at Remote Service Terminals, which interface the DSL subscriber’s premises (via the subscriber’s telephone line) to Internet service access. The ability to transport broadband data (high speed data) via copper

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<sup>29</sup> See Exhibit D.

cable circuits is distance sensitive. Higher speeds are limited to shorter service delivery distances, while lower speeds can be transported farther. Additionally, the copper cable access lines must be conditioned to remove loading coils, bridged taps, loop extenders and other impediments affecting the delivery of DSL service. Generally, it is considered that DSL service can only be offered and delivered to subscribers located no farther than approximately 18,000 feet from a DSLAM. However, certain equipment is available and may be deployed to extend the effective “reach” to subscribers outside the normal zone of service. The density and location of DSLAM-equipped Remote Service Terminals distributed throughout the carrier’s network is directly related to the DSL availability rate in a community.<sup>30</sup>

The cable broadband providers, excluding those with certificated telecommunications service territories, did not respond in either the requested format or with disaggregated data. The Missouri Cable Telecommunications Association (MCTA) provided a list of all cable companies and their franchise areas with the assertion that if the cable company was providing cable service in such a franchise area, broadband was deployed and available to 100% of its service area. Granular data was requested on the number of households in each franchise and specifics were requested on the prices and speeds offered to broadband subscribers. Despite multiple attempts to obtain this data, MCTA and most cable companies did not provide the level of granularity needed to fully analyze cable broadband availability. Obviously, there are significant differences between franchise territories and telephone exchange areas, making an exact comparison of service availability very difficult without additionally supplied detail. This commission has very

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<sup>30</sup> Asymmetric Digital Subscriber Line (ADSL) service offers downstream speed from 1.5 to 9 million bit per second, whereas upstream bandwidth ranges from 16 to 640 thousand bits per second. ADSL transmissions work at distances up to 18,000 feet (5,488 meters) over a single copper twisted pair. Symmetrical Digital Subscriber Line (SDSL) is also sometimes referred to as Single-line DSL is a proprietary version of symmetric DSL versions such as HDSL and HDSL2. SDSL technology offers digital bandwidth of up to 2.3 Mbps both ways (symmetrical) over a single twisted-pair copper phone line, over distances up to about 10,000 feet on an "unrepeated" basis. Newton’s Telecom Dictionary (19<sup>th</sup> ed. 2003); *see also* <<http://www.dslreports.com/faq/7284>>.

little authority over cable television providers and these Commissioners were unable to press for more detailed information. Therefore, some assumptions were made in the cable broadband analysis presented in this Report.

### **Quality and Reliability of Data<sup>31</sup>**

The survey estimates for number of households within individual exchange areas were consistent when compared to 2000 census data. In many telephone exchange areas, AT&T broadband availability data greatly exceeded the Staff-estimated number of households. Upon review of AT&T's methodology, these Commissioners accepted the greater figures of AT&T as being more accurate than the previous estimates. Therefore, for comparison purposes, AT&T's estimate of households (living units) was used to establish AT&T broadband availability.

Business data was not provided on a consistent basis among any of the carriers or technologies making the business data incomplete and unusable. However, some trends may be detectable within the limited data.

Less than one percent of the responders indicate that their Internet service offers transmission speeds of less than 200 kbps in both directions (upload and download). This type of service was not included as being an acceptable example of broadband.

Cable broadband data will require future study and scrutiny. The cable industry supplied aggregated data by identifying the franchise territories served by its members that did not necessarily match up with exchange boundaries. Cable data was not provided with specific reference as to speed, price or reach of the service offering within an exchange area. Since cable providers have different rules relating to carrier of last resort obligations and mandates of

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<sup>31</sup> Survey responses are considered highly confidential, so data is aggregated for purposes of this publicly available report.

universal service,<sup>32</sup> the responses of cable broadband providers were used to supplement the findings of telecommunications carriers' DSL offerings. This supplemental data was especially important in areas where DSL was not available.

In the 230 exchange areas in which cable broadband is available, in addition to DSL offerings by telecommunications carriers, it is unclear that cable would affect the overall percentage of wireline broadband availability. Cable service offerings do not extend beyond the borders of a franchise territory as exchange boundaries generally take in rural neighborhoods and communities beyond the city limits. These Commissioners were unable to identify the number of cable connections outside the technical reach of DSL (18,000 feet from the Central Office). When reviewing the 37 exchange areas in which cable is present where no DSL is available, an attempt was made to estimate the number of households in each franchise area. These exchange areas generally have less than 1,000 households and it is estimated that on average, cable providers are able to service approximately 29%<sup>33</sup> of the households within the exchange area.

Because of the lack of specific data, the inability of this Commission to compel more thorough and accurate responses, and because the study areas are significantly different when comparing telecommunications exchange areas with cable franchise territories, cable data can only be used in this limited manner.

There are ten communities served by municipal broadband services in addition to the DSL broadband offerings. Those communities are not included in exchange-by-exchange analyses or in state-wide compilations.<sup>34</sup>

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<sup>32</sup> §386.020(6), RSMo 2005.

<sup>33</sup> The Missouri Telecommunications Industry Association telephone exchange map, cable franchise map (*see* n. 19) and the Missouri Highway Department road map were used to determine municipalities associated with franchises. United States Census data was used to determine the population of each municipality. The population was then compared to the estimated number of Missourians in each exchange to determine a ratio of municipality population versus exchange population.

<sup>34</sup> *See* n. 24, *supra*.

According to representations by electric utility company representatives, Broadband over Power Lines (BPL) service is not available to the general public anywhere in Missouri. BPL is potentially a service that may become available in the future, but in Missouri, very little progress has been made by electric utilities, municipal electric providers or rural electric cooperatives in offering such service.

### **Findings**

The data is organized by exchange area size using the estimated number of households from the smallest to the largest. Each category includes the number of exchange areas reflected in the statistic. The wireline broadband deployment percentage must reference DSL broadband availability since the cable data is so difficult to use due to differences in service territories and product offerings. However, it is these Commissioners' assertion that because cable providers do not serve outside city limits and do not serve all customers within an exchange area, cable broadband availability would not materially affect the deployment rate. The percentage of DSL broadband deployment should accurately reflect the trends of total wireline broadband availability.

#### **Residential Statistics (689 exchange areas organized by number of households):**

Exchange areas with less than 100 households (17 exchanges)

- 78% of households have access to DSL broadband
- 4 exchanges have no access to any wireline broadband

Exchange areas with 100-500 households (269 exchanges)

- 53% of households have access to DSL broadband
- 77 exchanges have no access to DSL broadband
- 61 exchanges have no access to any wireline broadband (77 less 16 exchanges served in part by cable broadband)

Exchange areas with 500-1,000 households (136 exchanges)

- 52% of households have access to DSL broadband
- 30 exchanges have no access to DSL broadband
- 15 exchanges have no access to any wireline broadband (30 less 15 exchanges served in part by cable broadband)

Exchange areas with 1,000-5,000 households (194 exchanges)

- 64% of households have access to DSL broadband
- 16 exchanges have no access to DSL broadband
- 10 exchanges have no access to any wireline broadband (16 less 6 exchanges served in part by cable broadband)

Exchange areas with 5,000-10,000 households (38 exchanges)

- 65% of households have access to DSL broadband
- 1 exchange has no access to any wireline broadband (38 less 37 exchanges served in part by cable broadband)

Exchange areas with 10,000-15,000 households (18 exchanges)

- 60% of households have access to DSL broadband
- All exchanges in this category have access to some wireline broadband.

Exchange areas with 15,000-25,000 households (7 exchanges)

- 72% of households have access to DSL broadband
- All exchanges in this category have access to some wireline broadband.

Exchange areas with 25,000-50,000 households (7 exchanges)

- 78% of households have access to DSL broadband
- All exchanges in this category have access to some wireline broadband.

Exchange areas with greater than 50,000 households (3 Total - City of St. Louis, Kansas City and Springfield)

- 93% of households have access to DSL broadband
- All exchange areas in this category have access to some wireline broadband.

► **TOTAL (state-wide): 78%** of all Missouri households have access to DSL broadband.

► **TOTAL (without St. Louis, Kansas City and Springfield): 65%** of Missouri households have access to DSL broadband.

► **TOTAL (communities with less than 25,000 households): 62%** of Missouri households have access to DSL broadband.



- ▶ **TOTAL (communities with less than 15,000): 61%** of Missouri households have access to DSL broadband.

- ▶ There are **128 exchange areas** in which residential customers have no DSL broadband access. Most of these exchange areas have less than 500 households and all but one exchange areas have less than 5,500 households. Cable providers indicate serving, via franchise agreements, *part* of 37 of these exchange areas, leaving **91 exchange areas** with no wireline broadband access.

#### **Effect of high cost support in broadband access<sup>35</sup>**

Certain carriers receive high cost support from the Universal Service Fund to offer basic local telecommunications service in rural, high cost exchange areas. The funds received are used for the provision, maintenance and upgrade of facilities and services. All but one of Missouri's incumbent local exchange carriers receive some amount of high cost support, but this high cost support cannot necessarily be used in all exchange areas served by the carrier. Generally, exchange areas that receive high cost support can be categorized as being less than 10,000 households although a few exchange areas may be slightly larger. The following chart sets out DSL access by size of exchange area receiving high cost support. It should be noted that high cost support can only be used for voice-related infrastructure and it cannot be used directly on DSLAMS or Broadband-related equipment. The support can be used to upgrade voice-related plant which may indirectly allow a utility to offer broadband service.

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<sup>35</sup> See <[www.usac.org/hc](http://www.usac.org/hc)>. The Universal Service Fund is administered by the Universal Service Administrative Company (USAC). See also §386.020(21), RSMo. 2005.

### Exchanges Eligible for High-Cost Support

Exchange areas having number of residential households of:	Access to DSL broadband:
100 or less	78%
100 to 500	57%
500 to 1,000	63%
1,000 to 5,000	70%
5,000 to 10,000	61%
Greater than 10,000	85%

► **TOTAL: 67% of Households have access to DSL broadband**

There are carriers that do not receive high cost support in exchange areas for which they would otherwise be eligible. Certain carriers are not eligible to receive support and certain exchange areas are not considered high cost areas. The following chart sets out DSL broadband access by size of exchange area not eligible for high cost support.

### Exchange Areas Not Eligible For High-Cost Support

Exchange areas having number of residential households of:	Access to DSL broadband:
500 or less	28%
500 to 1000	33%
1,000 to 5,000	58%
5,000 to 10,000	65%
10,000 to 15,000	58%
15,000 to 25,000	69%
25,000 to 50,000	78%
Greater than 50,000	93%

► **TOTAL (state-wide): 79% have access to DSL broadband**

► **TOTAL (without St. Louis, Kansas City and Springfield): 64% have access to DSL broadband**

- ▶ **TOTAL (communities with less than 25,000 households): 60%** have access to DSL broadband
- ▶ **TOTAL (communities with less than 15,000 households): 58%** have access to DSL broadband

### **Residential Broadband Subscribership**

Since not all providers responded with subscriber data, it is not possible to summarize conclusions of broadband subscribership in Missouri. However, for those companies that did respond, generally only 25% of the households with broadband availability actually subscribe. The carriers who responded with subscribership information can generally be characterized as rural incumbent local exchange carriers. Providers indicated that customers may not be subscribing to broadband service because of technological constraints, geographical constraints, financial constraints or customers do not consider broadband to be necessary.

### **Residential Transmission Speeds**

Most responders offer various broadband tiers, ranging from a minimum of 200 kbps to a maximum of 1.5 megabits per second with some wireline broadband providers offering speeds of 3 mbps or greater. While providers indicated the various upload/download speeds being offered, data was not provided as to the speed available at any given location within the exchange area. Such specific identification would be difficult since transmission speeds are affected by such things as technological constraints, the type of equipment in use or the number of customers that access the broadband facilities at any given time. This survey did not request information or comparisons on advertised transmission speeds with actual transmission performance. Future studies should verify and confirm transmission speed performance.

## Residential Pricing

Pricing varied greatly among responders since prices are tied to the various tiers for upload/download transmission speeds. Since providers offer different tier packaging, it is difficult to make comparisons of price. However, as a point of reference, most carriers offer a 256 kbps/512 kbps transmission speed and the price for this service ranged from \$19.95 to \$46.95. These Commissioners were unable to identify any noticeable geographic trends in the variations in price (or service offerings among rural, urban or suburban areas).

## Exchanges Where DSL Broadband is Not Available By Type of Carrier

The most significant absence of broadband was found in exchanges where it is completely unavailable to any customer in an exchange. These exchanges are summarized below by size and by the type of carrier serving the exchange. Carriers are separated into categories of small carriers<sup>36</sup> and large carriers.<sup>37</sup> There are 128 exchange areas with no DSL service available and 91 exchange areas without any wireline broadband service.

Exchange areas with 0-100 households (4)	Large ILEC (1) Small ILEC (3)
Exchange areas with between 100-500 households (77)	Large ILEC (59) Small ILEC (18)
Exchange areas with between 500-1,000 households (30)	Large ILEC (25) Small ILEC (5)
Exchange areas with between 1,000-5,000 households (16)	Large ILEC (13) Small ILEC (3)
Exchange areas with between 5,000-10,000 households (1)	Large ILEC (1)

<sup>36</sup> Small Incumbent Local Exchange Carrier is a carrier that meets the definition of §392.230.4, RSMo. 2005. All incumbent local exchange carriers in Missouri, other than those listed in n. 37, *infra*, meet this definition.

<sup>37</sup> Large Incumbent Local Exchange Carrier is a carrier that does not meet the definition of a Small Telephone Company as defined in §392.230.4, RSMo. 2005. Large ILECs include AT&T, Embarq and Century Tel.

Exchange areas with between 10,000-15,000 households (0)      None

Exchange areas with greater than 15,000 households (0)      None

### **Business Broadband Availability and Subscribership**

Responders did not provide sufficient detail to draw any solid conclusions on broadband availability and subscribership for business customers. However, responders did comment that if broadband is available for residential customers in an exchange area, it could be assumed it was also available for business customers. Once again, as stated previously, there are 128 exchange areas in which DSL broadband is not available and 91 exchange areas in which there is no cable or DSL broadband available. Business wireline broadband availability may further be affected by the fact that cable broadband service is generally focused on residential customers rather than business customers, because the bundled cable television product is considered more recreational in nature. It should also be recognized that the data communications needs of business customers are frequently met by subscribership to more expensive and advanced product offerings such as frame relay and various forms of private line services.

### **Recommendations**

This Report suggests that Missouri faces similar broadband deployment challenges as other regions of the country.<sup>38</sup> While the urban and suburban areas boast up to 93% broadband availability, many communities, town and villages are without adequate Internet connections for modern day usage. There are 91 exchanges without any form of wireline broadband access which means that many communities are left behind in terms of information access, business opportunities or without access to critical services such as health care or education. Further,

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<sup>38</sup> See *Deployment Gaps in Rural Areas*, *id.* n. 11.

communities that may have partial wireline broadband coverage cannot be assured that the remainder of their citizens will have access at any time in the near future. With the limitations of DSL at 18,000 feet from the central office of the phone company, many citizens outside of that range must hope for other options. Twenty-two percent of Missouri families or over one million citizens and businesses fall into this category on the wrong side of the digital divide.

Additionally, the urban and suburban areas have many more competitive options when choosing a high-speed Internet connection. Urban areas may have one or more telecommunications providers, one or more cable operators as well as various wireless options. Several larger urban municipalities are attempting to install their own wireless system.<sup>39</sup> Most cities have multiple wireless phone providers that may be offering new forms of wireless broadband service to these residents,<sup>40</sup> yet there are many communities in rural areas and small towns that have a single cell phone provider and no broadband. Some have argued that satellite service will satisfy needs in rural Missouri, but problems in reliability, price and service limitations suggest this type of service is second-class.

The state-wide broadband “market” has achieved 78% broadband deployment in Missouri, but broadband carriers suggest that the market will not attract additional investment or expansion for fear of little or no financial return. Several carriers have offered hints that some communities will soon have a DSLAM permitting part of the community to have broadband access, but those hints lack certain dates of operation. Many have suggested that because of the

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<sup>39</sup> See n. 25; Logan, Tim, “Network 1 To Set Up Wireless Internet Network In O’Fallon, Mo.,” St. Louis Post-Dispatch (Sept. 15, 2007), <<http://www.stltoday.com/stltoday/business/stories.nsf/story/6A2BEC2FC70DBC8C86257357000E2554?OpenDocument>>.

<sup>40</sup> Gertzen, Jason and Hayes, David, “Sprint Plans A New Network, But Has Its Skeptics,” Kansas City Star (Sept. 15, 2007), < <http://www.kansascity.com/105/v-print/story/276913.html> >.

market shortcomings in rural areas, government incentives or intervention is necessary for the final push of equal Internet access for all.

**Recommendation 1:** States play a vital role in collecting data and evaluating the presence or absence of broadband availability and deployment. While the Commission's role in telecommunications is evolving, it is well-equipped to acquire and compile the necessary data for policy makers in highlighting the broadband and communications needs of Missouri.

The Commission, or a comparable state agency, must be specifically empowered to collect data on broadband deployment from all broadband carriers so that a comprehensive and complete report may be generated for policy makers. Further, that power must include the ability for maintaining proprietary records and keeping certain information confidential.

**Recommendation 2:** The FCC has declined to intervene in the broadband service market and has allowed market forces to dictate priorities in investment and service. The businesses and residents without access to high-speed connections may never be served by the market. If the market fails these customers, who have chosen as their right to reside in rural areas and small towns, it may be appropriate for state or federal action to assure equity in broadband Internet access.

Policy makers must make broadband access a priority and send the right messages to regulators, telecommunications providers and the market. Political will may be what is required for the final push for communications equity. These messages might include tax incentives, regulatory incentives, statutory mandates and state or federal appropriations. States such as North Carolina (through its tobacco settlement), Oregon (through low-cost financing), Washington (through a public-private partnership), Kentucky (through public-private

partnerships, funded partially through tax dollars) and other states (through a state high-cost universal support fund) have found creative mechanisms to make broadband a priority.

**Recommendation 3:** Some have argued that absent federal support from the high-cost Universal Service Fund, additional private investment in broadband services will not occur.<sup>41</sup> These arguments have been made in spite of the exponential growth of the current high-cost fund and the controversy over the support methodologies. This study suggests that telecommunications carriers receiving high-cost support have been more aggressive at broadband deployment and some have argued it is due to cash infusions from the USF.

High-cost support may be an option to advance the investment in broadband deployment, however, any funding methodology must carefully consider the barriers for each area and for each carrier. Some carriers have suggested the primary barrier is the initial capital investment in DSLAMs or installing fiber optic equipment to the remote terminal. Some other carriers have suggested that data transport costs from the central office to the ISP and from the ISP to the Internet backbone are the primary barriers to entry. Still other carriers have suggested that the greatest barrier to broadband deployment is the disappointing subscribership in certain areas due to lack of interest or need, lower than average incomes or other economic reasons.

Policy makers must creatively and comprehensively evaluate the reasons causing broadband deployment to stall and craft any potential funding mechanism to solve each of the unique circumstances. The current high-cost fund methodologies are no longer financially viable and, in some circumstances, have little regard for actual costs incurred by certain carriers.

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<sup>41</sup> See Federal-State Joint Board on Universal Service, Statement on Long Term, Comprehensive High-Cost Universal Service Reform, WC Docket, CC Docket No. 05-337, CC Docket No. 96-45, <[www.fcc.gov](http://www.fcc.gov)>; Statement of Commissioner Michael J. Copps, (Sept. 6, 2007), *id.*



## **In Conclusion**

State and federal leaders in both the executive and legislative branches must make broadband equity a priority when evaluating communications system availability. Elected and appointed officials must find the appropriate manner in which rural customers can compete professionally and enjoy life similarly as their urban friends. It has been suggested that the United States continues to fall behind other nations in access to advanced communications systems. A great portion of the actual people falling behind are those in rural areas of the country who already face great difficulties in being competitive in a global market. It is from the perspective of those without communications access that we should judge America's competitive position in the world. If that perspective is considered, these Commissioners believe that significant and prompt action is absolutely necessary.

Respectfully submitted,



Robert M. Clayton III  
Commissioner



Steve Gaw  
Commissioner

Dated at Jefferson City, Missouri,  
on this 18<sup>th</sup> day of September, 2007.



# DIGITAL NATION

## 21st Century America's Progress Toward Universal Broadband Internet Access

*An NTIA Research Preview*  
February 2010

U.S. Department of Commerce  
National Telecommunications and Information Administration



[www.ntia.doc.gov](http://www.ntia.doc.gov)



# FOREWORD



*“President Obama believes that all Americans should have access to broadband and the transformative opportunities it affords. Broadband services allow individuals to access new career and educational opportunities. They help businesses reach new markets and improve efficiency. They support struggling communities that seek to attract new industries. And they enhance the government’s capacity to deliver critical services.”*

From: *Recovery Act Investments in Broadband*  
National Economic Council, Executive Office of the President  
December 2009

The release of this report, *Digital Nation: 21<sup>st</sup> Century America’s Progress Toward Universal Broadband Internet Access*, by the U.S. Department of Commerce occurs at a critical juncture in the nation’s quest for universal broadband Internet access. The report confirms that at the end of the first decade of the 21<sup>st</sup> Century, too many Americans still rely on slow, narrowband Internet access or do not use the Internet at all. This fact and others revealed in the report underscore the importance of the Administration’s policy objective to ensure that all Americans have affordable access to broadband Internet services.

The report’s findings are based on data collected in October 2009 through a special Internet Use Supplement, sponsored by NTIA, to the U.S. Census Bureau’s Current Population Survey. With a sample size of approximately 54,000 households and 129,000 citizens, the survey data provides compelling information on the state of Internet use and broadband access across America. In combination with other data collection efforts currently taking place at the Federal Communications Commission, NTIA and other federal, state and private entities, this report will greatly enrich our knowledge across numerous dimensions on the status of Internet connectivity.

The Internet has not only transformed the way we communicate, but also how we live, work, and learn. Although life without high speed Internet service seems unimaginable for many Americans, for too many others, broadband is still unattainable. As the world leader in technology innovation and the place where the Internet was pioneered, we can and must do better. This report will help identify both the gaps in Internet access and the reasons people that have such access are choosing not to use it. We hope that, armed with this new data, policymakers can support our nation’s continued competitiveness in the 21<sup>st</sup> Century information economy.

**Lawrence E. Strickling**  
*Assistant Secretary for Communications and Information*  
*U.S. Department of Commerce*

# DIGITAL NATION

## 21st Century America's Progress Toward Universal Broadband Internet Access

*An NTIA Research Preview*

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**Lawrence E. Strickling**, Assistant  
Secretary for Communications and  
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**Anna Gomez**, Deputy Assistant Secretary  
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### Acknowledgments

*The Project Team would like to thank Tom Power, Jessica Schafer, Bart Forbes, Charles Franz, and Josephine Arnold of NTIA; Mark Doms of the Economics and Statistics Administration; David Johnson of the Census Bureau; and Marc Berejka and Patricia Buckley of the Office of the Secretary for their contributions to this report.*

## EXECUTIVE SUMMARY

During the first decade of the 21<sup>st</sup> Century, U.S. broadband Internet connectivity by households has increased dramatically as its importance to our economy and way of life has grown. Based on a survey of over 50,000 households commissioned by the National Telecommunications and Information Administration (NTIA) and conducted by the United States Census Bureau, virtually all demographic groups have increased their adoption of broadband services at home over time. The data also reveal that demographic disparities among groups have persisted over time. Persons with high incomes, those who are younger, Asians and Whites, the more highly-educated, married couples, and the employed tend to have higher rates of broadband use at home. Conversely, persons with low incomes, seniors, minorities, the less-educated, non-family households, and the non-employed tend to lag behind other groups in home broadband use.

Survey results demonstrate that persons in rural areas are less likely to use the Internet. For example, Blacks and Hispanics in rural areas exhibit a lesser propensity to use broadband than their counterparts in urban areas. A substantial difference in home broadband penetration remains between urban and rural areas. Although the gap has declined since 2007, it still is significant.

Despite the growing importance of the Internet in American life, over 30 percent of households and 35 percent of persons do not use the Internet at home, and 30 percent of all persons do not use the Internet anywhere. Those with no broadband access at home amount to more than 35 percent of all households and approximately 40 percent of all persons, with a larger proportion in rural areas in both categories. Overall, the two most important reasons given by survey respondents for not having broadband access at home are “don’t need” and “too expensive.”<sup>1</sup> Inadequate or no computer is also a major reason given for no home broadband adoption. In rural America, lack of availability is a much more important reason for non-adoption than in urban areas.

The U.S. Department of Commerce will undertake a more detailed analysis later this year when the full data base becomes available, and anticipates sponsoring new collections of Census data and conducting analyses of these data bases. We also will look forward to the findings that the broader research community will provide based on this data.

## INTRODUCTION

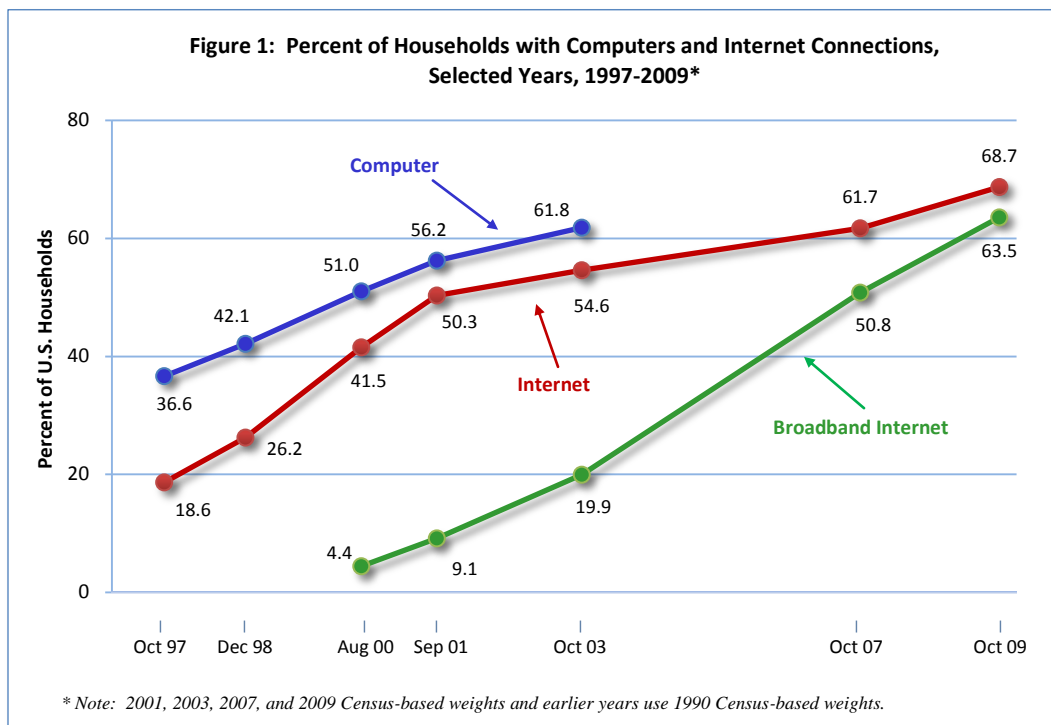
Universal access to and adoption of 21<sup>st</sup> Century broadband for all citizens is a top priority for the Obama Administration. Widespread access is critical to America’s future as the world’s economic leader because of its impact on increasing our productivity, global competitiveness, and improving Americans’ quality of life – through economic growth and development, job creation, national security, telemedicine, distance learning, public safety, civic engagement, and telework. As the President stated:

One key to strengthening education, entrepreneurship, and innovation in communities... is to harness the full power of the Internet, and that means faster and more widely available broadband.<sup>2</sup>

In the analysis below, the U.S. Department of Commerce's NTIA probes the data collected by its sister agency, U.S. Bureau of the Census, as part of the Current Population Survey (CPS). This special Internet Use Supplement periodically surveys approximately 54,000 households and gathers information on some 129,000 persons.<sup>3</sup> The Census Bureau conducted this survey in October 2009, the eighth such Internet survey sponsored by NTIA since the early 1990s.<sup>4</sup> Below, the report documents the rapid growth overall of both broadband and the Internet in general, and the disparate increases in adoption experienced by demographic groups and geographic areas.<sup>5</sup> Finally, we examine the major reasons why some Americans do not access broadband Internet at home.<sup>6</sup> The raw data on which this report is based are posted at <http://www.ntia.doc.gov/data/index.html> and can be found through dataset pointers at <http://www.data.gov>.<sup>7</sup>

## ACCESS AND USE

During the first decade of the 21<sup>st</sup> Century, U.S. broadband Internet connectivity by households has grown dramatically as its importance to our economy and way of life has grown.<sup>8</sup>

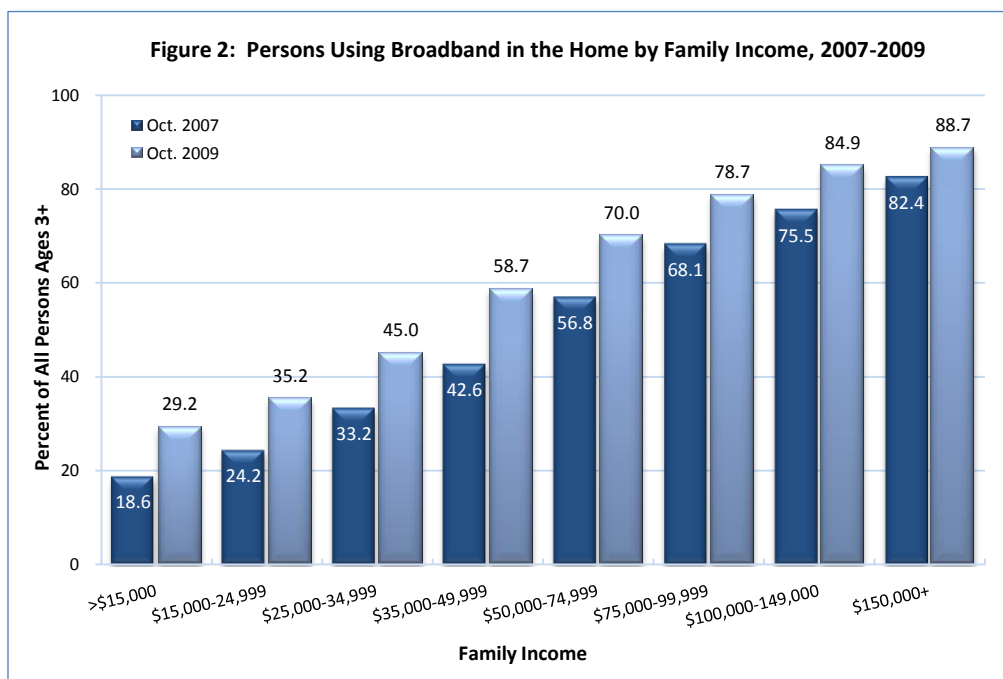


In October 2009, according to the Census Current Population Survey data, 63.5 percent (75.8 million) of U.S. households used a high-speed Internet – “broadband” -- service (*i.e.*, technologies that are faster than dial-up, such as DSL, cable modem, fiber optics, satellite, and wireless). This represented a 25 percent increase from just two years earlier (50.8 percent in October 2007). From the initial CPS study results in August 2000 (4.4 percent), broadband adoption exhibited robust gains each time new data results were developed. (See Figure 1.) During this time, the incidence of dial-up use leveled off, then plummeted. In 2000, dial-up already was a thriving service, with 37.0 percent (39.0 million) of households having such

capability by August. In October 2003, the incidence of dial-up use had slipped to 34.3 percent (38.6 million) of all households, only to decline more than sevenfold by October 2009 to 4.7 percent (5.6 million). Virtually all demographic groups have experienced rising broadband use at home over time. Demographic groups categorized by family income levels, age, race, educational attainment, employment status, household types, and gender all have enjoyed a higher incidence of broadband connectivity since 2007. (See Figures 2-7 below.)

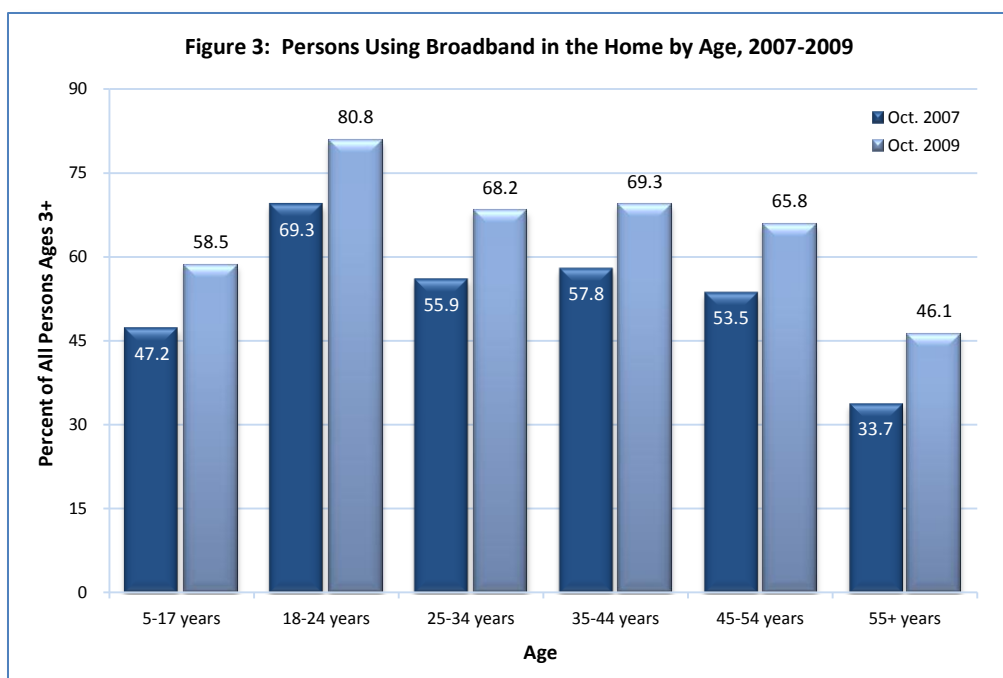
The data also have revealed that the basic demographic characteristics of broadband use at home have tended not to change.

*Usage by income.* In 2009, when viewed by income, the users of broadband at home ranged from the highest percentages by those persons who are most affluent (with annual family income of \$150,000 or greater) to the lowest percentages by those with \$15,000 annual family income or less. These 2009 results mirror the 2007 survey which also found that the highest broadband use at home was by those who were most affluent and the lowest use was by those persons living in households with \$15,000 annual family income or less.

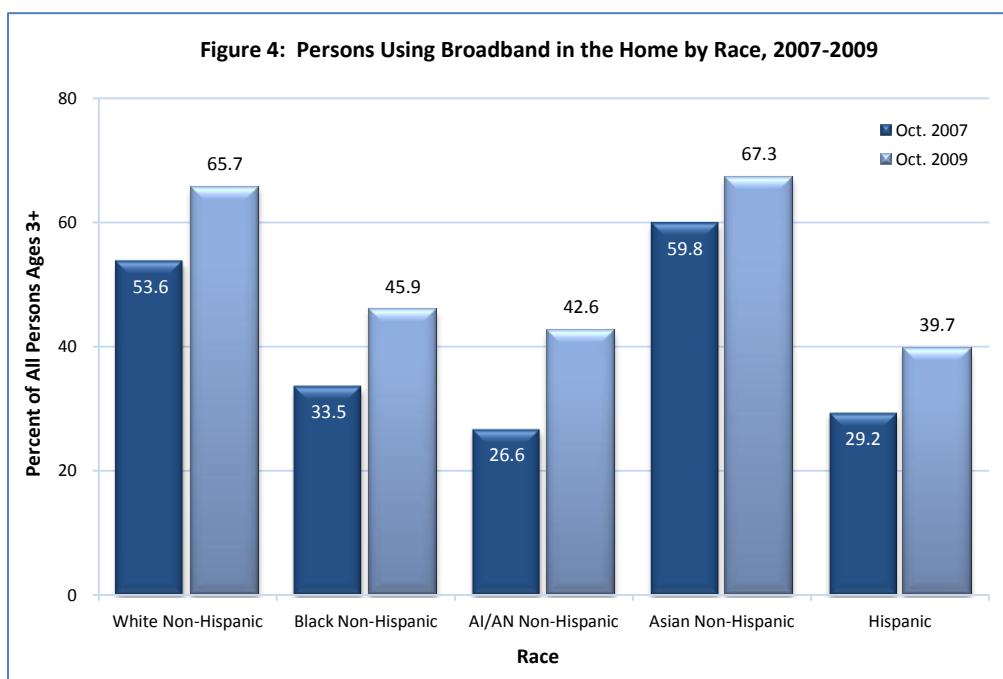


*Usage by age.* By age brackets, persons 18-24 years old exhibited the greatest broadband use at home, while seniors (55 years or older) used broadband at home the least. Those 25-54 years old proved to be middle range in adoption as well as in the array of age brackets. This is consistent with our findings in 2007.





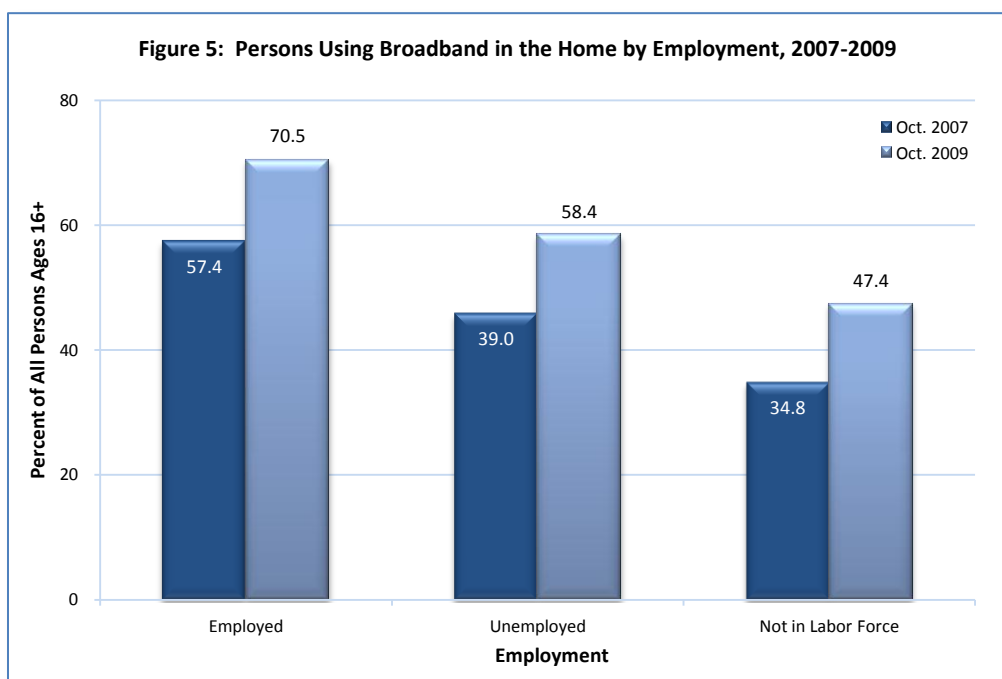
*Usage by race and ethnicity.* Gauging broadband use at home by race and ethnicity, Asian non-Hispanics led all other groups in 2009, with White non-Hispanics second in usage, followed by a grouping of Black non-Hispanics, Native Americans (American Indians/Alaskan Natives), and Hispanics. In 2007, the pattern was not dissimilar; although Hispanics and Native Americans switched places, the small differential may not be statistically significant.<sup>9</sup>



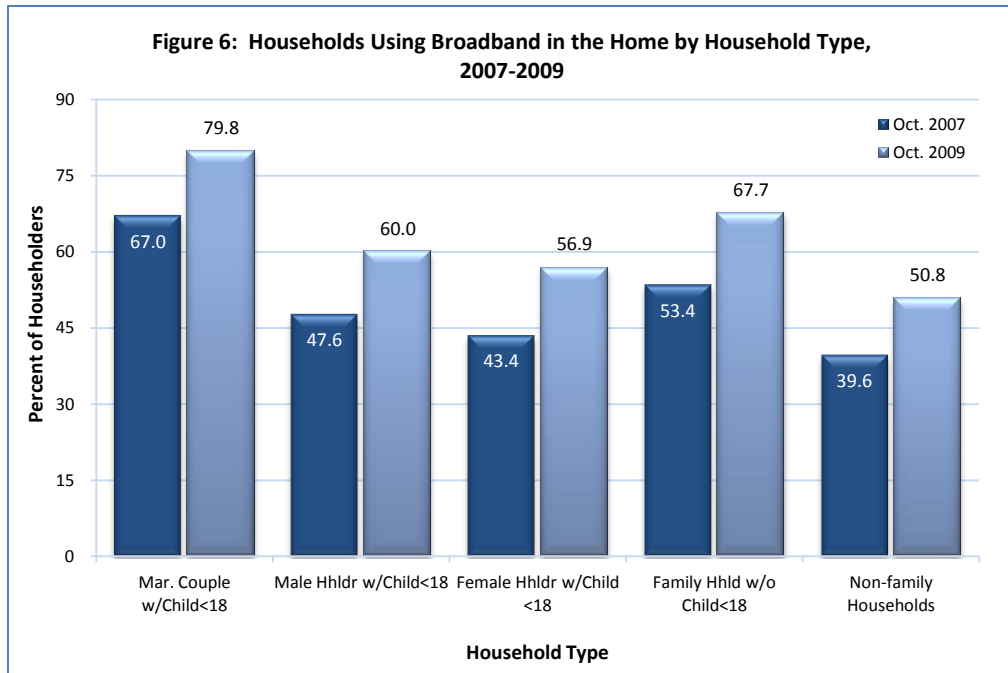
*Usage by education level.* For households with householders 25 years and older in 2009, 84 percent of those with college degrees had broadband access at home. In contrast, only 28 percent of those householders with less than a high school diploma had such access. The conclusion that

persons with the highest levels of education exhibit the highest broadband use and those with the least education experience the lowest adoption rate is consistent with past survey results on the subject.<sup>10</sup>

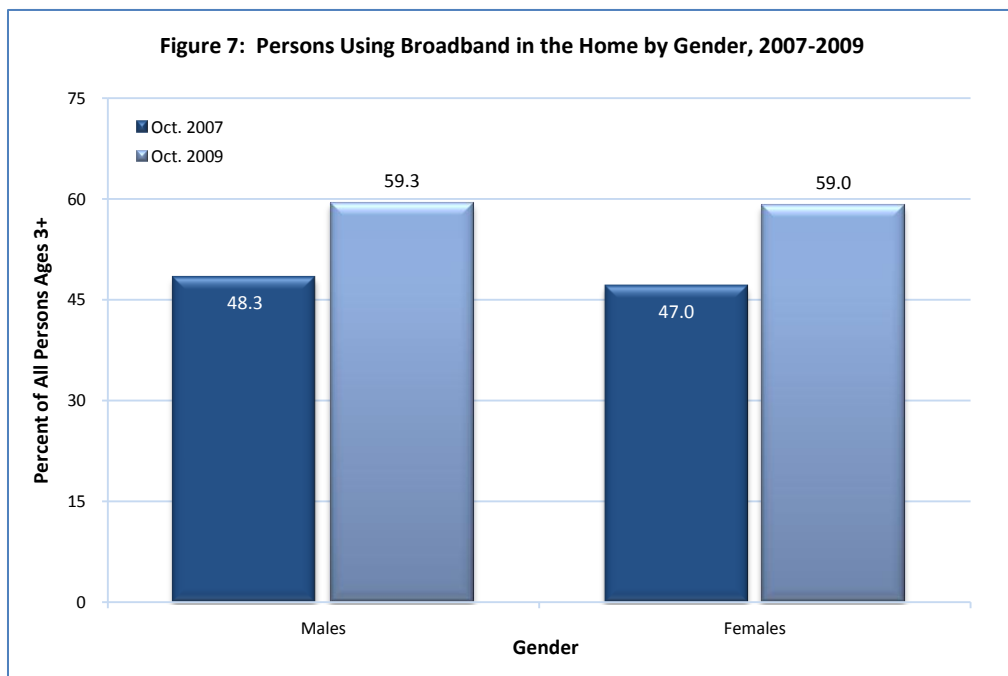
*Usage by employment status.* Employment status revealed a pattern with broadband use at home that featured the highest percentage use by those persons who were employed, with the unemployed and particularly those persons not in the labor force lagging behind in usage. This is similar to our findings in 2007.



*Usage by household type.* Classifying by household type, married couples with children younger than 18 years old surpassed all other groups in broadband use at home in 2009 and 2007, followed by family households (i.e., two-parent or single parent) without younger children. Non-family (i.e., where the householder is unrelated to other members of the household) rated lowest in both years, followed by female householders (heads of house) with young children.

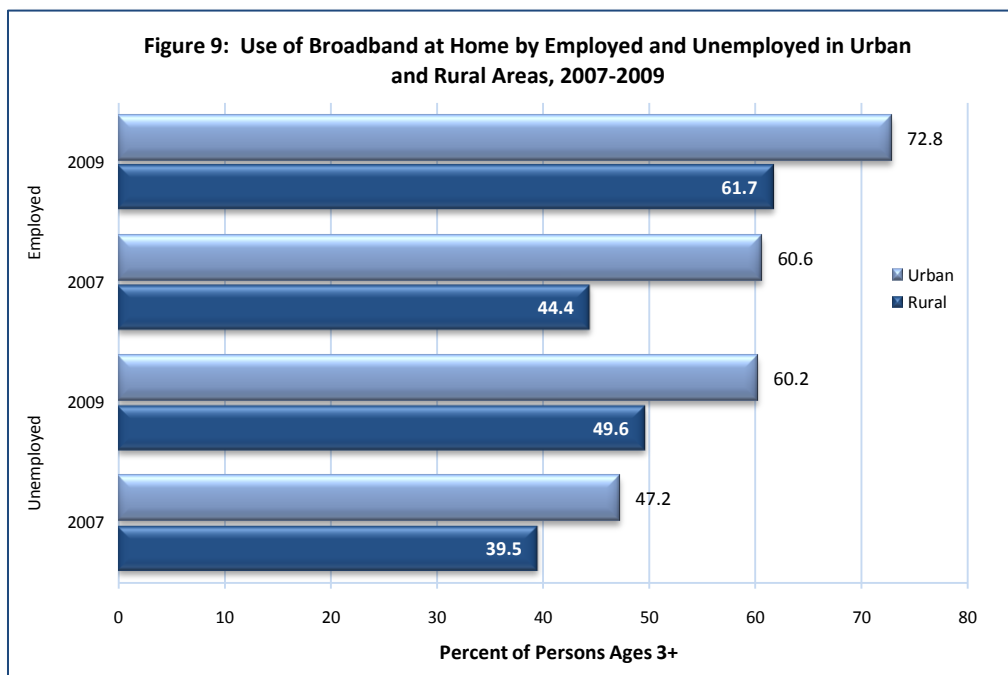
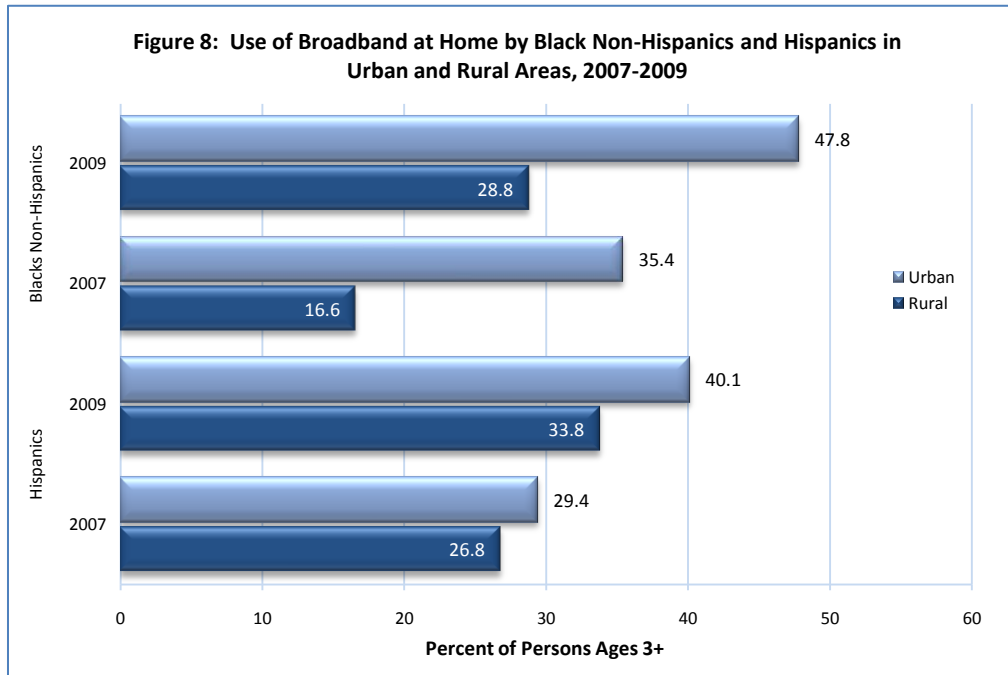


*Usage by gender.* With respect to gender, males registered only slightly higher broadband use at home than females in 2009 (59.3 percent v. 59.0 percent). This is consistent with our findings in 2007 (48.3 percent v. 47.0 percent).



*Usage by location.* Americans in rural areas tend to have lower broadband adoption rates than their demographic counterparts in urban areas. For example, in 2009 Blacks (28.8 percent) and Hispanics (33.8 percent) in rural areas exhibited much lower levels of broadband use at home

than their counterparts in urban areas (47.8 percent and 40.1 percent, respectively). Similarly, both employed (61.7 percent) and unemployed persons (49.6 percent) in rural America had significantly lower broadband use at home than their counterparts in urban areas (72.8 percent and 60.2 percent, respectively). This is consistent with our findings in 2007, albeit at lower levels of participation.



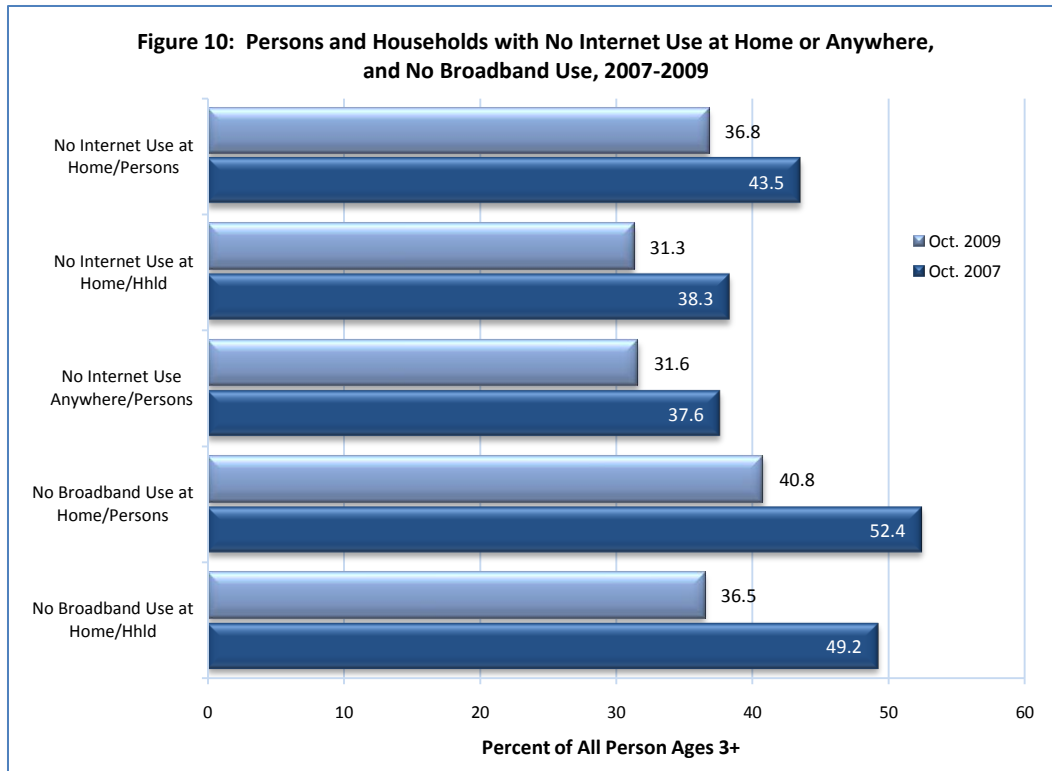
There remains a substantial difference in overall broadband use at home between urban and rural areas. The gap has declined since 2007 but still exists. In 2009, 65.9 percent of urban households and 54.1 percent of rural households accessed broadband service. In contrast, 8.9 percent of rural households and only 3.7 percent of urban households used dial-up. In 2007, 53.8 percent of households in urban areas and 38.8 percent of households in rural America were broadband users. Again, rural homes relied more heavily on dial-up (19.3 percent) than urban did (8.5 percent) that year. Broadband use at home also varies by regions, with the West (68.0 percent of households) and Northeast (67.0 percent) leading, followed by the Midwest (62.2 percent), and the South (60.0 percent) in 2009.

*Internet usage anywhere.* In 2009, the incidence of Internet use anywhere (i.e., inside or outside the home) by Americans totaled 68.4 percent (197.9 million persons, ages three and older).<sup>11</sup> This represents an increase from 62.4 percent (177.9 million) in 2007. Similar to the broadband pattern, all demographic categories with respect to Internet use anywhere experienced rising adoption over time but historical demographic differences in use have continued. Interestingly, the urban-rural gap in Internet use anywhere in 2009 registered only 4.4 percentage points (69.3 v. 64.9 percent), which was decidedly less than the broadband use at home differential. In 2007, however, the urban and rural divide relating to Internet use in all areas equaled only 2.2 percentage points (62.8 v. 60.6 percent).

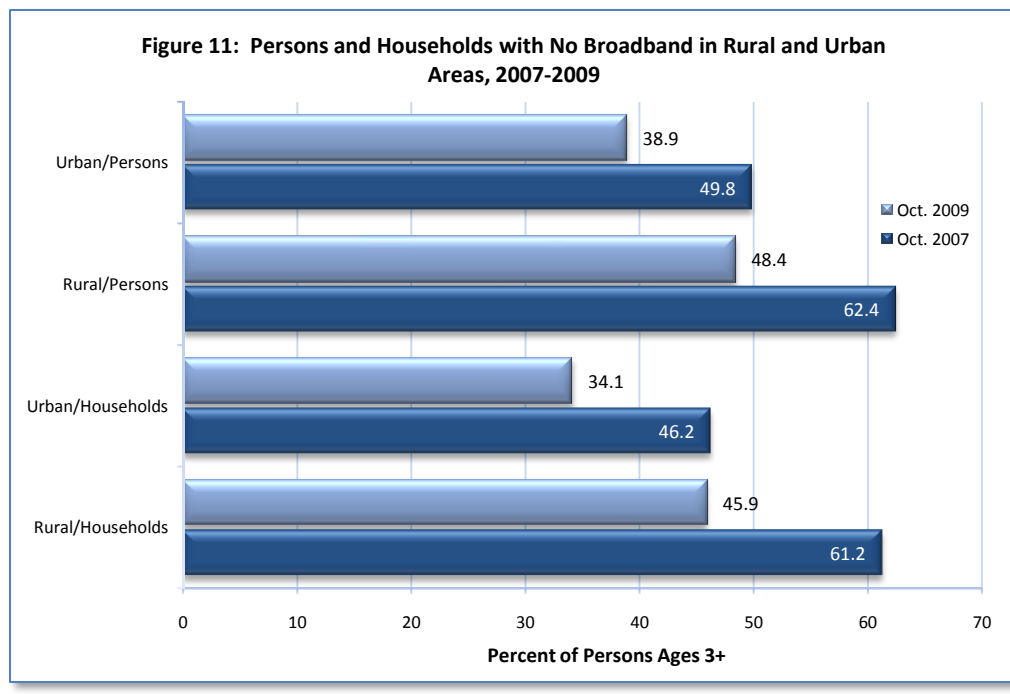
## NON-USE

*Non-usage at home.* Collectively, the proportion of those Americans who do not use the Internet at home declined between 2007 and 2009 but persists at a level higher than 30 percent today. Utilizing a household measurement, the percentage dropped by seven percentage points during the span, registering 31.3 percent in 2009. Measured in persons (three years and older), such non-users numbered 36.8 percent in 2009 and had dropped almost seven percentage points in two years.

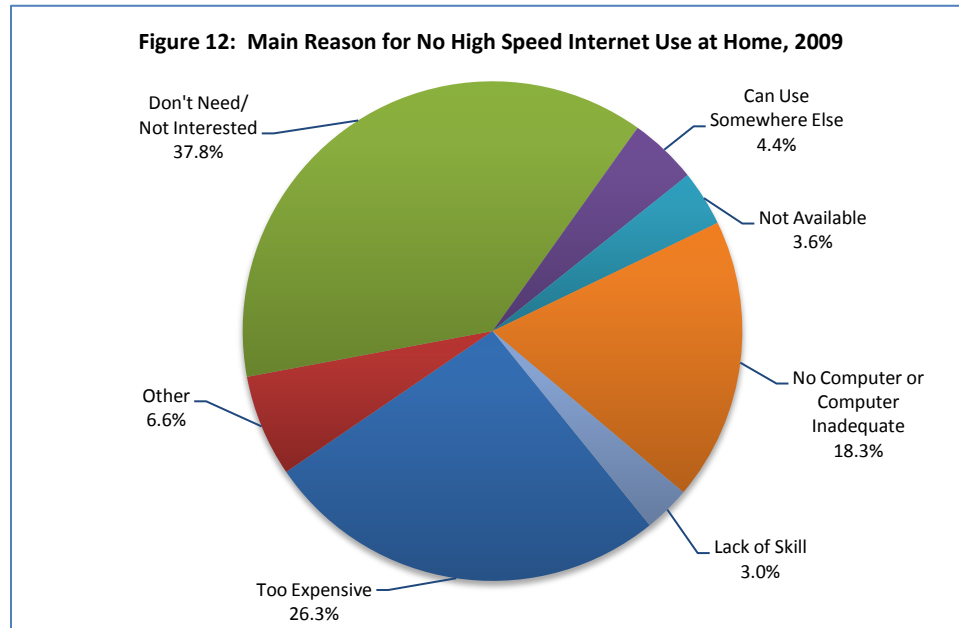
Those persons who do not use broadband at home total more than 35 percent of all households and approximately 40 percent of all persons, with a larger proportion in rural areas. More specifically, 36.5 percent of households and 40.8 percent of persons did not use such high-speed Internet at home in 2009. The urban-rural gap was found to exist, regardless of the unit of measure. In rural areas, 45.9 percent of households and 48.4 percent of persons had no home broadband access, while the corresponding numbers for urban areas are 34.1 percent for households and 38.9 percent for persons. In 2007, the overall figures and those for rural and urban respectively registered more than ten percentage points higher.



*Non-usage anywhere.* Similarly, the category of not using the Internet inside or outside the home remains at more than 30 percent of all persons. Those persons (ages three and older) who do not use the Internet at all numbered 31.6 percent in 2009 and 37.6 percent in 2007.



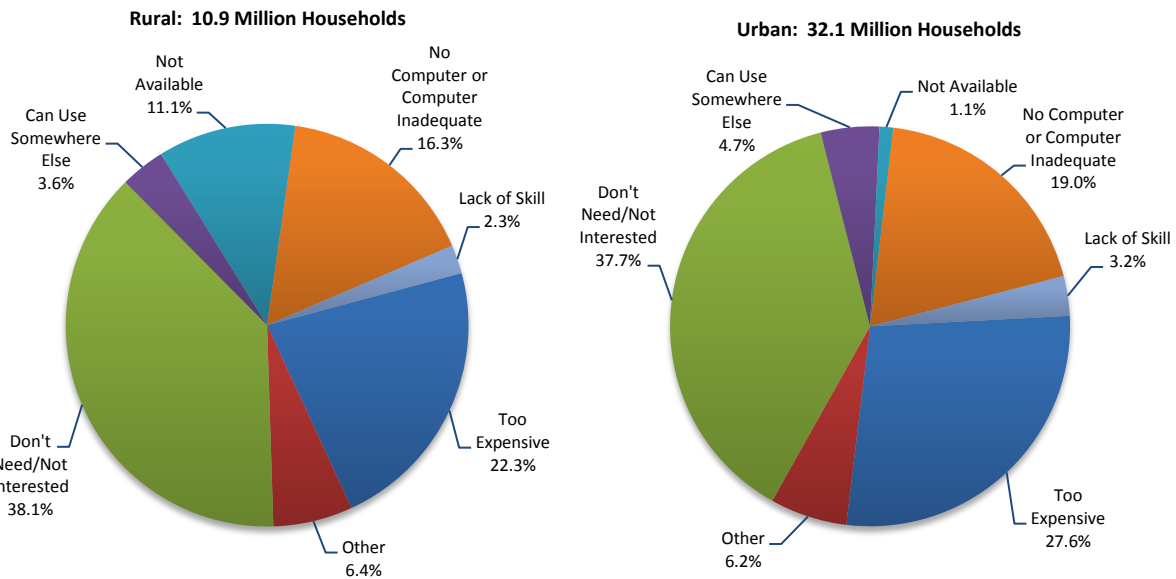
*Main reasons for non-use of broadband.* Overall, the two most important reasons for no broadband access at home are “don’t need” and “too expensive.” Households without high-speed Internet access at home stated that “don’t need” (a value proposition) is more important than cost (affordability). The next most important reason is “no computer or inadequate computer,” followed by “can use somewhere else,” “not available,” and “lack of skill.”



In rural America, “not available” is a much more important reason for non-adoption of home broadband than in urban areas. “Don’t need” and cost ranked highest in both categories, and the “no computer or computer inadequate” issue ranked third. However, “not available” accounts for more than 10 percent of the main reasons for non-use in rural areas but accounts for only about a one percent factor in urban areas.

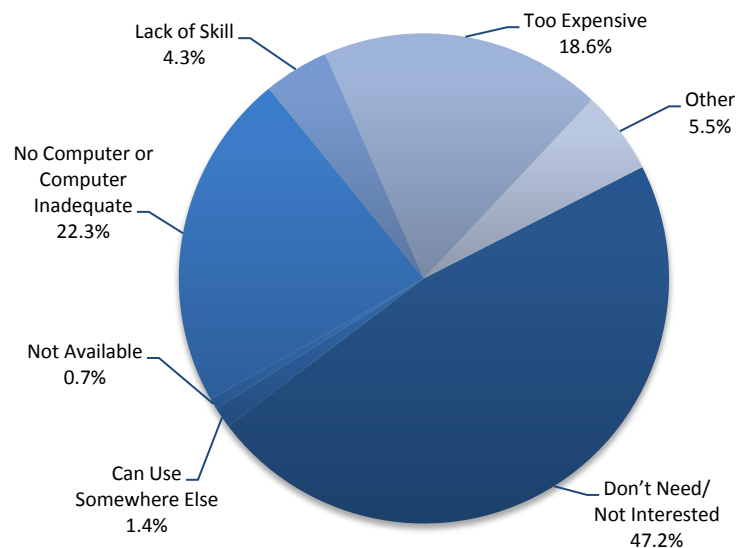


**Figure 13: Main Reason for No High-Speed Internet Use at Home, Rural/Urban, 2009**



When other types of non-use are examined, however, the rankings can and do change. For example, respondents who do not use the Internet anywhere ranked the value proposition significantly higher than affordability.

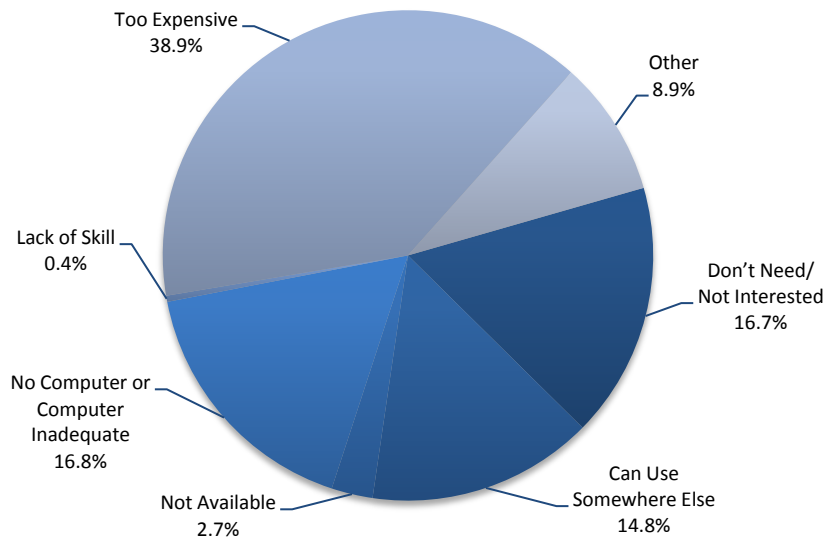
**Figure 14: Main Reason Given for No Internet Use at Any Location, 2009**



This contrasts with the category of households that do not access the Internet at home, which rated cost as the clear-cut top concern.

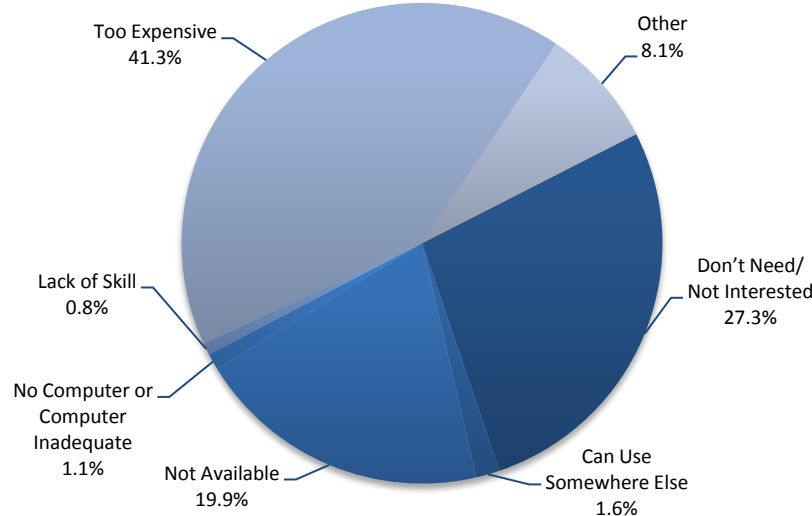


**Figure 15: Main Reason Given for No Internet Connection at Home, 2009**



Similarly, those in households with dial-up service identified cost as the most important reason for not having broadband connectivity at home.

**Figure 16: Main Reason Given for Lack of Broadband in Households with Dial-up Internet Access, 2009**



The answer category “no computer or computer inadequate” is highly ranked by each of the above groups (Figures 13-16) except the dial-up category. The latter cites lack of availability as much more important, especially in rural areas where it is cited as the most important reason (42.6 percent), followed by cost (32.5 percent).

## CONCLUSION

The Internet is integral to the U.S. economy and our standard of living. The nation's broadband Internet access adoption rate is at an all-time high, but a number of Americans still do not use the technology. This initial analysis of the 2009 survey results begins the process of developing a factual basis for sound policymaking to expand the adoption of and access to Internet technology, particularly broadband.

This preview report is based on summary Current Population Survey (CPS) data provided to NTIA by the Census Bureau. Later this year, the U.S. Department of Commerce will make the complete data set publicly available, enabling a much more comprehensive analysis of Internet usage patterns around the country. We anticipate that a more detailed examination of the CPS data base would offer additional insights for public policymakers. The Commerce Department's National Telecommunications & Information Administration and Economics and Statistics Administration will undertake such an analysis later this year when the full additional CPS data base becomes available. We will also look forward to the findings that the broader research community will provide based on this data.

While many Americans have come to grasp the importance of broadband as evidenced by increasing use of the technology across virtually all demographic groups and geographic areas, there exist differences in adoption rates across groups and areas that have tended to persist. Non-adoption rates for the Internet and broadband total 30 percent or more. Survey results provide insights as to why this non-use occurs. Lack of perceived value ("don't need") in using the technology ranks number one among the major reasons for non-use with respect to broadband at home and Internet anywhere, and for rural and urban areas. Affordability ("too expensive"), however, rates highest among the major reasons for eschewing broadband at home among those with either no Internet at home or only dial-up service. Lack of an adequate or any computer ranks high generally as a rationale for not having broadband at home, as does lack of availability in rural areas. Further probing finds that the most important reasons that those with dial-up service in rural areas do not subscribe to broadband include the latter's unavailability and affordability.

These findings provide a better understanding of the scope and nature of broadband adoption in our nation. Knowing which demographic groups or geographic areas are either leading or lagging -- and why -- in their use of this high-speed Internet can sharpen the focus of public decision-making that can help bridge this technological divide, boost economic growth and create jobs. The Obama Administration's Open Government initiative is pursuing a wide range of programs making government information and services available online. These efforts, along with innovative commercial and non-commercial activities, can bolster demand for broadband Internet access in market segments identified by this report as experiencing weak demand and high access barriers. This Administration's broadband deployment and adoption initiative is a high-priority effort to help ensure that Americans can truly enjoy and participate in the Internet economy.

<sup>1</sup> By “most important,” we mean the most frequently ascribed major reason given by respondents in the survey.

<sup>2</sup> President Barack Obama, September 21, 2009, in Troy New York. [http://www.whitehouse.gov/the\\_press\\_office/Remarks-by-the-President-on-Innovation-and-Sustainable-Growth-at-Hudson-Valley-Community-College/](http://www.whitehouse.gov/the_press_office/Remarks-by-the-President-on-Innovation-and-Sustainable-Growth-at-Hudson-Valley-Community-College/)

<sup>3</sup> For household-level estimates based on the total sample, the error attributable to sampling and other random effects at the 90 percent confidence level is no more than plus or minus 0.35 percentage points based on a standard error (SE) of 0.21 percentage points. For results based on Internet households, the margin of sampling error is no more than plus or minus 0.43 percentage points, based on a SE of 0.26 percentage points.

<sup>4</sup> More specifically, NTIA wholly or partially funded (with Commerce's Economics and Statistics Administration) and designed survey instruments for CPS Computer and Internet Use Supplements in 1994, 1997, 1998, 2000, 2001, and 2003, and Internet Use Supplements in 2007 and 2009. The data became the basis for the Commerce reports “Falling Through the Net” (1995, 1998, 1999, 2000) and “A Nation Online” (2002, 2004), and provided input into the NTIA report “Networked Nation: Broadband in America 2007.”

<sup>5</sup> In a subsequent report, NTIA and ESA will examine in more detail the demographic details available in the October 2009 CPS data base.

<sup>6</sup> In this report, we examine broadband from the demand side based on the Census CPS survey of households. Thus, terms such as “use,” “adopt,” “access,” and “connect” refer to the perspective of a household or person. This is to be distinguished from supply-side (provider) considerations such as “deployment” that, in turn, can result in demand perceptions such as “lack of availability.”

<sup>7</sup> Data from the October 2009 CPS Internet Use survey can be retrieved at [www.ntia.doc.gov/data/index.html](http://www.ntia.doc.gov/data/index.html). For historical CPS data used in this report, see also “Internet and Computer Use Supplements” at <http://www.bls.census.gov/cpsftp.html#cpssupps>.

<sup>8</sup> As shown in Figure 1, household adoption of both Internet access overall and computers has been rising significantly since 1997 albeit collection of the latter data by Census ceased in 2003.

<sup>9</sup> Figure 4 provides percentages for Native Americans in the column, “AI/AN Non-Hispanic,” which is an abbreviation for “American Indians/ Alaskan Natives Non-Hispanic.”)

<sup>10</sup> Previous years' data on Internet use have shown consistently that people with higher education levels are more likely to use the Internet. See Jennifer Cheeseman Day, Alex Janus and Jessica Davis “Computer and Internet Use in the United States: 2003” Series P23-208, Washington, DC: U.S. Census Bureau. Using a basis of persons who are 16 years and older in the October 2009 CPS data collection, the direct relationship between educational level and broadband adoption generally holds. This sample would include current high school students as well as adults who never finished high school, thereby introducing distortions into the analysis. The Department of Commerce's more detailed look at educational attainment and broadband use in the future will focus on the more meaningful CPS data set that includes only those persons 25 years of age and above.

<sup>11</sup> Because a household measure is less useful than a person basis in gauging Internet or broadband use outside the home, it is not used in this context in the report.



**Households using the Internet in and outside the home, by selected characteristics: Total, Urban, Rural, Principal City, 2007**

<b>Total USA</b>		<b>INTERNET USE</b>								<b>NO INTERNET USE</b>	
<b>(Numbers in Thousands)</b>		<b>IN THE HOME</b>						<b>ANYWHERE</b>			
	<b>TOTAL HHLDS</b>	<b>TOTAL</b>		<b>DIAL-UP</b>		<b>BROADBAND</b>					
		<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>
Total Householders	117,840	72,721	61.71	12,575	10.67	59,847	50.79	83,708	71.04	34,132	28.96
<b>FAMILY INCOME OF HOUSEHOLDER</b>											
Under \$5,000	2,688	858	31.92	141	5.25	717	26.66	1,261	46.91	1,427	53.09
5,000-9,999	4,670	1,151	24.64	284	6.09	857	18.36	1,701	36.42	2,969	63.58
10,000-14,999	6,581	1,722	26.16	468	7.11	1,243	18.89	2,471	37.54	4,110	62.46
15,000-19,999	4,905	1,740	35.47	415	8.45	1,320	26.91	2,331	47.51	2,575	52.49
20,000-24,999	5,943	2,419	40.70	700	11.78	1,714	28.83	3,137	52.78	2,807	47.22
25,000-34,999	11,650	5,935	50.94	1,299	11.15	4,621	39.66	7,565	64.93	4,085	35.07
35,000-49,999	13,718	9,010	65.68	1,979	14.43	7,000	51.03	10,723	78.17	2,995	21.83
50,000-74,999	17,101	13,706	80.15	2,351	13.75	11,282	65.98	15,151	88.60	1,949	11.40
75,000-99,999	9,872	8,743	88.57	1,121	11.35	7,586	76.84	9,326	94.47	546	5.53
100,000-149,999	8,481	7,809	92.08	682	8.04	7,097	83.68	8,118	95.72	363	4.28
150,000+	5,570	5,319	95.49	277	4.97	5,031	90.33	5,450	97.85	120	2.15
Not reported	26,662	14,310	53.67	2,859	10.72	11,380	42.68	16,475	61.79	10,187	38.21
<b>AGE OF HOUSEHOLDER</b>											
Under 25 years	7,028	4,057	57.73	391	5.56	3,650	51.93	5,238	74.52	1,791	25.48
25-34 years	19,718	12,936	65.61	1,384	7.02	11,498	58.31	15,566	78.94	4,152	21.06
35-44 years	22,854	16,400	71.76	2,318	10.14	14,026	61.37	18,862	82.53	3,992	17.47
45-54 years	24,773	17,504	70.65	3,073	12.41	14,356	57.95	19,763	79.78	5,010	20.22
55+ years	43,467	21,824	50.21	5,409	12.44	16,317	37.54	24,280	55.86	19,188	44.14
<b>RACE OF HOUSEHOLDER</b>											
White Non Hispanic	83,294	55,763	66.95	9,787	11.75	45,742	54.92	62,593	75.15	20,701	24.85
Black Non Hispanic	14,303	6,428	44.94	1,205	8.43	5,200	36.36	8,433	58.96	5,870	41.04
AI/AN Non Hispanic	643	267	41.47	72	11.20	192	29.78	385	59.88	258	40.12
Asian Non Hispanic	4,477	3,381	75.51	271	6.06	3,093	69.08	3,672	82.03	805	17.97
Hispanic	13,619	5,905	43.36	1,094	8.03	4,792	35.19	7,463	54.80	6,156	45.20
<b>GENDER OF HOUSEHOLDER</b>											
Male	59,871	39,084	65.28	6,328	10.57	32,589	54.43	43,985	73.47	15,887	26.53
Female	57,969	33,637	58.03	6,247	10.78	27,258	47.02	39,723	68.53	18,245	31.47
<b>EDUCATIONAL ATTAINMENT OF HOUSEHOLDER</b>											
Elementary:0-8 years	5,812	1,076	18.51	312	5.37	762	13.10	1,490	25.64	4,322	74.36
Some H.S.:no diploma	9,264	2,609	28.16	681	7.35	1,897	20.47	3,542	38.24	5,721	61.76
H.S. Diploma/GED	35,295	17,340	49.13	4,266	12.09	12,996	36.82	20,973	59.42	14,322	40.58
Some College	33,078	22,786	68.88	3,998	12.09	18,689	56.50	26,498	80.11	6,580	19.89
Bachelors degree or more	34,392	28,910	84.06	3,318	9.65	25,503	74.15	31,205	90.73	3,187	9.27
<b>HOUSEHOLD TYPE</b>											
Mar Couple w/Child<18	26,219	20,602	78.58	2,974	11.34	17,563	66.99	22,681	86.51	3,538	13.49
Male Hhldr w/Child<18	2,803	1,578	56.30	245	8.73	1,333	47.56	1,983	70.74	820	29.26
Female Hhldr w/Child<18	10,022	5,280	52.69	913	9.11	4,351	43.42	7,215	71.99	2,807	28.01
Family Hhld w/o Child<18	39,052	26,178	67.03	5,214	13.35	20,854	53.40	28,564	73.14	10,488	26.86
Non-family Households	39,744	19,082	48.01	3,230	8.13	15,745	39.62	23,265	58.54	16,479	41.46
<b>EMPLOYMENT OF HOUSEHOLDER</b>											
Employed	76,336	53,997	70.74	7,971	10.44	45,815	60.02	62,369	81.70	13,967	18.30
Unemployed	3,085	1,718	55.68	298	9.67	1,407	45.61	2,241	72.63	844	27.37
Not in Labor Force	38,419	17,006	44.26	4,306	11.21	12,625	32.86	19,098	49.71	19,321	50.29
<b>REGION</b>											
Northeast	21,553	13,737	63.74	1,977	9.17	11,723	54.39	15,273	70.86	6,280	29.14
Midwest	26,714	16,259	60.86	3,126	11.70	13,067	48.92	19,245	72.04	7,469	27.96
South	43,370	25,417	58.60	4,849	11.18	20,454	47.16	29,594	68.23	13,777	31.77
West	26,203	17,308	66.05	2,624	10.01	14,603	55.73	19,596	74.79	6,607	25.21

Total USA		INTERNET USE								NO INTERNET USE	
(Numbers in Thousands)		IN THE HOME						ANYWHERE			
STATE	TOTAL HHLDS	TOTAL		DIAL-UP		BROADBAND					
		No.	%	No.	%	No.	%	No.	%	No.	%
Alabama	1,866	930	49.81	232	12.42	698	37.39	1,131	60.61	735	39.39
Alaska	244	179	73.37	25	10.43	153	62.50	206	84.25	38	15.75
Arizona	2,459	1,536	62.46	202	8.22	1,327	53.94	1,764	71.73	695	28.27
Arkansas	1,142	585	51.20	136	11.93	437	38.24	708	61.98	434	38.02
California	13,037	8,614	66.07	1,222	9.37	7,359	56.44	9,600	73.64	3,437	26.36
Colorado	1,959	1,354	69.13	212	10.83	1,137	58.04	1,545	78.89	413	21.11
Connecticut	1,403	931	66.32	90	6.42	838	59.73	1,030	73.39	373	26.61
Delaware	324	213	65.67	48	14.92	163	50.37	236	72.75	88	27.25
Washington, DC	276	163	58.94	18	6.64	144	51.97	207	74.70	70	25.30
Florida	7,599	4,921	64.76	832	10.95	4,041	53.18	5,300	69.74	2,299	30.26
Georgia	3,663	2,261	61.73	283	7.73	1,975	53.91	2,636	71.95	1,027	28.05
Hawaii	423	271	64.14	25	5.85	244	57.57	307	72.51	116	27.49
Idaho	569	330	57.92	68	12.02	259	45.55	398	69.87	171	30.13
Illinois	4,980	3,137	63.00	548	11.00	2,571	51.64	3,653	73.36	1,327	26.64
Indiana	2,579	1,498	58.10	402	15.60	1,091	42.30	1,754	68.03	825	31.97
Iowa	1,230	767	62.40	191	15.52	575	46.79	905	73.63	324	26.37
Kansas	1,115	700	62.76	80	7.19	616	55.21	856	76.72	260	23.28
Kentucky	1,749	960	54.86	253	14.44	700	40.02	1,166	66.67	583	33.33
Louisiana	1,622	875	53.93	179	11.01	696	42.91	1,024	63.15	598	36.85
Maine	541	352	65.11	89	16.51	262	48.41	403	74.53	138	25.47
Maryland	2,173	1,443	66.42	215	9.89	1,220	56.14	1,668	76.76	505	23.24
Massachusetts	2,578	1,710	66.35	133	5.17	1,574	61.07	1,880	72.92	698	27.08
Michigan	3,987	2,334	58.54	496	12.45	1,829	45.88	2,818	70.68	1,169	29.32
Minnesota	2,113	1,407	66.56	282	13.35	1,121	53.04	1,662	78.63	452	21.37
Mississippi	1,137	523	45.97	143	12.54	378	33.22	679	59.73	458	40.27
Missouri	2,394	1,344	56.13	253	10.58	1,085	45.31	1,612	67.31	783	32.69
Montana	424	241	56.86	71	16.69	170	40.18	291	68.57	133	31.43
Nebraska	713	455	63.82	69	9.63	386	54.09	526	73.85	186	26.15
Nevada	1,001	654	65.36	106	10.62	544	54.35	735	73.40	266	26.60
New Hampshire	532	399	74.90	53	9.88	346	64.93	429	80.60	103	19.40
New Jersey	3,292	2,252	68.42	372	11.30	1,880	57.11	2,439	74.08	853	25.92
New Mexico	806	441	54.75	90	11.20	348	43.21	543	67.42	262	32.58
New York	7,471	4,596	61.51	542	7.25	4,043	54.11	5,081	68.00	2,391	32.00
North Carolina	3,548	2,015	56.78	336	9.46	1,671	47.10	2,405	67.78	1,143	32.22
North Dakota	274	162	59.30	28	10.40	133	48.66	199	72.59	75	27.41
Ohio	4,611	2,702	58.59	438	9.50	2,248	48.75	3,188	69.13	1,423	30.87
Oklahoma	1,436	762	53.07	202	14.04	556	38.75	914	63.69	521	36.31
Oregon	1,513	1,031	68.18	155	10.26	870	57.54	1,139	75.28	374	24.72
Pennsylvania	5,056	3,038	60.08	614	12.14	2,410	47.66	3,502	69.26	1,554	30.74
Rhode Island	420	278	66.09	28	6.59	249	59.25	305	72.48	116	27.52
South Carolina	1,783	976	54.72	272	15.27	698	39.14	1,190	66.75	593	33.25
South Dakota	324	197	60.80	43	13.15	154	47.46	239	73.63	85	26.37
Tennessee	2,492	1,333	53.51	297	11.93	1,036	41.57	1,641	65.85	851	34.15
Texas	8,794	5,040	57.31	843	9.59	4,190	47.64	5,991	68.12	2,804	31.88
Utah	897	623	69.47	90	9.99	532	59.31	735	82.00	161	18.00
Vermont	258	181	70.17	56	21.82	121	46.76	205	79.42	53	20.58
Virginia	3,013	2,049	68.01	439	14.56	1,606	53.29	2,261	75.04	752	24.96
Washington	2,656	1,901	71.56	334	12.56	1,552	58.41	2,169	81.67	487	18.33
West Virginia	752	369	49.11	121	16.10	246	32.72	438	58.20	314	41.80
Wisconsin	2,394	1,556	64.98	295	12.31	1,258	52.57	1,834	76.60	560	23.40
Wyoming	215	132	61.41	23	10.91	108	50.39	164	76.42	51	23.58

Households using the Internet in and outside the home, by selected characteristics: Total, Urban, Rural, Principal City, 2007

Urban		INTERNET USE								NO INTERNET USE	
(Numbers in Thousands)		IN THE HOME						ANYWHERE			
TOTAL HHLDS		TOTAL		DIAL-UP		BROADBAND					
		No.	%	No.	%	No.	%	No.	%	No.	%
Total Householders	94,446	59,075	62.55	8,061	8.54	50,775	53.76	67,745	71.73	26,701	28.27
<b>FAMILY INCOME OF HOUSEHOLDER</b>											
Under \$5,000	2,242	754	33.60	110	4.90	643	28.69	1,106	49.32	1,136	50.68
5,000-9,999	3,704	935	25.24	186	5.01	742	20.04	1,379	37.22	2,326	62.78
10,000-14,999	5,257	1,426	27.12	316	6.00	1,103	20.97	2,046	38.91	3,212	61.09
15,000-19,999	3,845	1,428	37.14	278	7.22	1,145	29.78	1,889	49.12	1,957	50.88
20,000-24,999	4,730	1,966	41.56	489	10.33	1,472	31.12	2,523	53.35	2,207	46.65
25,000-34,999	9,275	4,796	51.71	865	9.33	3,915	42.21	6,114	65.92	3,161	34.08
35,000-49,999	10,786	7,097	65.79	1,209	11.21	5,862	54.35	8,459	78.43	2,327	21.57
50,000-74,999	13,578	10,979	80.86	1,447	10.65	9,470	69.75	12,041	88.69	1,536	11.31
75,000-99,999	7,981	7,129	89.33	650	8.14	6,446	80.77	7,547	94.57	433	5.43
100,000-149,999	6,915	6,418	92.82	411	5.95	5,988	86.59	6,641	96.04	274	3.96
150,000+	4,835	4,624	95.63	185	3.83	4,431	91.63	4,729	97.81	106	2.19
Not reported	21,297	11,523	54.11	1,916	9.00	9,558	44.88	13,270	62.31	8,027	37.69
<b>AGE OF HOUSEHOLDER</b>											
Under 25 years	6,156	3,623	58.85	297	4.83	3,310	53.76	4,629	75.20	1,527	24.80
25-34 years	17,009	11,334	66.64	955	5.62	10,326	60.71	13,472	79.21	3,536	20.79
35-44 years	18,446	13,360	72.43	1,447	7.85	11,870	64.35	15,257	82.71	3,189	17.29
45-54 years	19,383	13,791	71.15	1,815	9.37	11,927	61.53	15,495	79.94	3,888	20.06
55+ years	33,453	16,966	50.72	3,547	10.60	13,342	39.88	18,891	56.47	14,561	43.53
<b>RACE OF HOUSEHOLDER</b>											
White Non Hispanic	62,694	43,189	68.89	5,646	9.01	37,370	59.61	48,042	76.63	14,653	23.37
Black Non Hispanic	12,929	5,982	46.27	1,002	7.75	4,958	38.35	7,841	60.65	5,088	39.35
AI/AN Non Hispanic	365	180	49.24	32	8.74	145	39.62	239	65.56	126	34.44
Asian Non Hispanic	4,384	3,316	75.64	265	6.05	3,034	69.22	3,599	82.09	785	17.91
Hispanic	12,841	5,585	43.50	1,016	7.91	4,551	35.44	7,046	54.87	5,795	45.13
<b>GENDER OF HOUSEHOLDER</b>											
Male	47,212	31,536	66.80	3,947	8.36	27,457	58.16	35,217	74.59	11,994	25.41
Female	47,235	27,539	58.30	4,114	8.71	23,318	49.37	32,528	68.86	14,707	31.14
<b>EDUCATIONAL ATTAINMENT OF HOUSEHOLDER</b>											
Elementary: 0-8 years	4,566	894	19.58	235	5.16	659	14.43	1,248	27.33	3,318	72.67
Some H.S.: no diploma	7,172	2,055	28.65	449	6.26	1,575	21.95	2,802	39.06	4,371	60.94
H.S. Diploma/GED	26,289	12,738	48.45	2,454	9.34	10,230	38.91	15,423	58.67	10,866	41.33
Some College	26,585	18,279	68.76	2,499	9.40	15,697	59.05	21,259	79.97	5,325	20.03
Bachelors degree or more	29,835	25,109	84.16	2,424	8.12	22,614	75.80	27,014	90.54	2,821	9.46
<b>HOUSEHOLD TYPE</b>											
Mar Couple w/Child<18	20,553	16,245	79.04	1,711	8.32	14,492	70.51	17,693	86.09	2,859	13.91
Male Hhldr w/Child<18	2,273	1,299	57.15	152	6.69	1,147	50.46	1,613	70.96	660	29.04
Female Hhldr w/Child<18	8,689	4,576	52.66	666	7.66	3,894	44.81	6,217	71.55	2,472	28.45
Family Hhld w/o Child<18	29,399	20,103	68.38	3,084	10.49	16,931	57.59	21,801	74.16	7,598	25.84
Non-family Households	33,533	16,852	50.25	2,449	7.30	14,311	42.68	20,421	60.90	13,112	39.10
<b>EMPLOYMENT OF HOUSEHOLDER</b>											
Employed	61,808	44,179	71.48	4,919	7.96	39,088	63.24	50,712	82.05	11,097	17.95
Unemployed	2,617	1,468	56.09	223	8.54	1,232	47.08	1,920	73.36	697	26.64
Not in Labor Force	30,021	13,428	44.73	2,919	9.72	10,454	34.82	15,113	50.34	14,907	49.66
<b>REGION</b>											
Northeast	18,154	11,450	63.07	1,345	7.41	10,088	55.57	12,733	70.14	5,421	29.86
Midwest	20,461	12,494	61.06	1,752	8.56	10,689	52.24	14,768	72.18	5,693	27.82
South	32,510	19,740	60.72	2,872	8.83	16,772	51.59	22,806	70.15	9,704	29.85
West	23,322	15,390	65.99	2,093	8.97	13,227	56.71	17,438	74.77	5,883	25.23

Urban		INTERNET USE								NO INTERNET USE	
(Numbers in Thousands)		IN THE HOME						ANYWHERE			
		TOTAL		DIAL-UP		BROADBAND					
		No.	%	No.	%	No.	%	No.	%		
STATE											
Alabama	1,065	569	53.43	95	8.88	475	44.55	686	64.38	379	35.62
Alaska	149	114	76.56	15	9.84	99	66.00	127	85.04	22	14.96
Arizona	2,169	1,332	61.40	170	7.85	1,154	53.21	1,553	71.60	616	28.40
Arkansas	616	318	51.59	40	6.44	268	43.48	381	61.91	235	38.09
California	12,358	8,153	65.97	1,061	8.58	7,061	57.14	9,100	73.63	3,258	26.37
Colorado	1,766	1,201	68.00	175	9.93	1,020	57.79	1,378	78.02	388	21.98
Connecticut	1,242	810	65.26	71	5.74	736	59.32	896	72.17	346	27.83
Delaware	263	173	65.75	31	11.78	141	53.50	194	73.79	69	26.21
Washington, DC	276	163	58.94	18	6.64	144	51.97	207	74.70	70	25.30
Florida	7,008	4,541	64.80	721	10.28	3,776	53.88	4,914	70.11	2,095	29.89
Georgia	2,720	1,707	62.74	176	6.47	1,527	56.15	1,983	72.89	738	27.11
Hawaii	395	253	64.22	23	5.73	228	57.71	285	72.19	110	27.81
Idaho	384	225	58.43	46	12.06	177	46.09	267	69.45	117	30.55
Illinois	4,470	2,808	62.82	395	8.84	2,395	53.59	3,276	73.29	1,194	26.71
Indiana	1,836	1,007	54.82	181	9.88	825	44.94	1,211	65.98	625	34.02
Iowa	790	500	63.30	104	13.21	395	49.95	581	73.48	210	26.52
Kansas	836	547	65.37	37	4.38	509	60.82	647	77.40	189	22.60
Kentucky	985	579	58.80	98	9.95	474	48.13	702	71.30	283	28.70
Louisiana	1,174	653	55.61	86	7.32	567	48.29	759	64.71	414	35.29
Maine	218	137	63.11	20	9.10	117	53.80	163	74.89	55	25.11
Maryland	1,917	1,276	66.58	169	8.81	1,101	57.42	1,485	77.47	432	22.53
Massachusetts	2,376	1,554	65.42	118	4.97	1,433	60.33	1,717	72.27	659	27.73
Michigan	3,004	1,728	57.51	251	8.36	1,471	48.95	2,084	69.38	920	30.62
Minnesota	1,607	1,079	67.15	172	10.72	903	56.21	1,265	78.75	341	21.25
Mississippi	473	240	50.87	29	6.23	211	44.64	304	64.27	169	35.73
Missouri	1,765	1,030	58.36	122	6.93	902	51.12	1,227	69.51	538	30.49
Montana	236	133	56.23	27	11.53	105	44.70	164	69.65	72	30.35
Nebraska	534	351	65.80	41	7.63	310	58.03	403	75.44	131	24.56
Nevada	957	624	65.18	97	10.16	523	54.62	701	73.27	256	26.73
New Hampshire	327	240	73.41	17	5.20	223	68.21	256	78.27	71	21.73
New Jersey	3,112	2,115	67.97	343	11.01	1,773	56.96	2,296	73.79	816	26.21
New Mexico	612	357	58.35	72	11.81	283	46.31	425	69.41	187	30.59
New York	6,521	3,961	60.74	376	5.77	3,579	54.89	4,357	66.81	2,164	33.19
North Carolina	2,170	1,308	60.27	169	7.81	1,130	52.09	1,542	71.05	628	28.95
North Dakota	164	103	62.78	13	7.63	90	54.93	125	75.92	40	24.08
Ohio	3,573	2,141	59.93	267	7.46	1,859	52.03	2,540	71.10	1,033	28.90
Oklahoma	956	534	55.91	103	10.83	429	44.86	626	65.51	330	34.49
Oregon	1,164	812	69.74	102	8.75	710	60.99	899	77.22	265	22.78
Pennsylvania	3,867	2,311	59.76	365	9.44	1,943	50.24	2,691	69.60	1,176	30.40
Rhode Island	386	249	64.46	23	5.94	225	58.23	275	71.32	111	28.68
South Carolina	1,114	620	55.61	136	12.25	479	43.01	740	66.42	374	33.58
South Dakota	176	113	64.36	12	6.71	101	57.65	133	75.48	43	24.52
Tennessee	1,703	970	56.93	145	8.53	824	48.40	1,207	70.86	496	29.14
Texas	7,472	4,308	57.66	596	7.97	3,705	49.59	5,108	68.36	2,364	31.64
Utah	742	511	68.82	61	8.28	448	60.33	610	82.20	132	17.80
Vermont	107	73	68.28	12	11.22	58	54.65	82	76.83	25	23.17
Virginia	2,262	1,611	71.23	227	10.03	1,385	61.20	1,767	78.10	495	21.90
Washington	2,266	1,599	70.58	231	10.21	1,352	59.68	1,835	81.00	431	19.00
West Virginia	334	169	50.65	32	9.70	136	40.61	202	60.29	133	39.71
Wisconsin	1,705	1,087	63.76	156	9.16	928	54.45	1,275	74.78	430	25.22
Wyoming	124	77	62.48	11	9.12	66	53.36	95	76.47	29	23.53



Households using the Internet in and outside the home, by selected characteristics: Total, Urban, Rural, Principal City, 2007

Rural		INTERNET USE								NO INTERNET USE	
(Numbers in Thousands)		IN THE HOME						ANYWHERE			
TOTAL HHLDS		TOTAL		DIAL-UP		BROADBAND					
		No.	%	No.	%	No.	%	No.	%	No.	%
Total Householders	23,394	13,646	58.33	4,514	19.29	9,072	38.78	15,963	68.24	7,431	31.76
<b>FAMILY INCOME OF HOUSEHOLDER</b>											
Under \$5,000	446	105	23.46	31	7.04	73	16.42	155	34.81	290	65.19
5,000-9,999	966	216	22.33	99	10.21	115	11.90	322	33.37	644	66.63
10,000-14,999	1,324	296	22.34	152	11.50	140	10.60	425	32.12	899	67.88
15,000-19,999	1,060	312	29.41	137	12.91	175	16.50	442	41.68	618	58.32
20,000-24,999	1,213	453	37.34	211	17.41	242	19.93	613	50.55	600	49.45
25,000-34,999	2,375	1,139	47.96	434	18.26	705	29.70	1,451	61.09	924	38.91
35,000-49,999	2,932	1,913	65.27	770	26.25	1,137	38.80	2,264	77.23	668	22.77
50,000-74,999	3,523	2,726	77.38	905	25.67	1,813	51.45	3,110	88.27	413	11.73
75,000-99,999	1,891	1,614	85.34	471	24.90	1,139	60.24	1,778	94.02	113	5.98
100,000-149,999	1,566	1,391	88.82	271	17.29	1,109	70.83	1,477	94.32	89	5.68
150,000+	734	695	94.63	92	12.47	600	81.78	721	98.14	14	1.86
Not reported	5,364	2,787	51.95	942	17.57	1,822	33.97	3,205	59.75	2,159	40.25
<b>AGE OF HOUSEHOLDER</b>											
Under 25 years	872	434	49.79	94	10.72	340	39.02	608	69.75	264	30.25
25-34 years	2,709	1,602	59.12	429	15.84	1,172	43.27	2,093	77.27	616	22.73
35-44 years	4,408	3,040	68.96	871	19.76	2,156	48.91	3,605	81.78	803	18.22
45-54 years	5,390	3,713	68.88	1,258	23.34	2,429	45.07	4,268	79.18	1,122	20.82
55+ years	10,015	4,858	48.51	1,862	18.59	2,974	29.70	5,389	53.81	4,626	46.19
<b>RACE OF HOUSEHOLDER</b>											
White Non Hispanic	20,600	12,574	61.04	4,140	20.10	8,373	40.65	14,551	70.64	6,049	29.36
Black Non Hispanic	1,374	446	32.44	204	14.82	242	17.63	591	43.05	782	56.95
AI/AN Non Hispanic	278	87	31.29	40	14.41	47	16.88	146	52.45	132	47.55
Asian Non Hispanic	94	65	69.48	6	6.79	59	62.68	74	78.94	20	21.06
Hispanic	777	319	41.10	78	10.01	242	31.09	417	53.61	361	46.39
<b>GENDER OF HOUSEHOLDER</b>											
Male	12,660	7,548	59.62	2,381	18.81	5,132	40.54	8,767	69.25	3,892	30.75
Female	10,734	6,098	56.81	2,133	19.87	3,940	36.70	7,196	67.04	3,538	32.96
<b>EDUCATIONAL ATTAINMENT OF HOUSEHOLDER</b>											
Elementary:0-8 years	1,247	182	14.58	77	6.16	103	8.25	243	19.47	1,004	80.53
Some H.S.:no diploma	2,091	554	26.50	232	11.09	322	15.40	741	35.42	1,350	64.58
H.S. Diploma/GED	9,006	4,602	51.11	1,811	20.11	2,766	30.72	5,550	61.63	3,456	38.37
Some College	6,493	4,507	69.41	1,499	23.08	2,992	46.08	5,239	80.68	1,254	19.32
Bachelors degree or more	4,557	3,801	83.40	895	19.63	2,889	63.39	4,191	91.97	366	8.03
<b>HOUSEHOLD TYPE</b>											
Mar Couple w/Child<18	5,666	4,357	76.90	1,263	22.30	3,071	54.20	4,988	88.03	678	11.97
Male Hhldr w/Child<18	531	280	52.67	93	17.43	187	35.14	370	69.79	160	30.21
Female Hhldr w/Child<18	1,333	704	52.85	247	18.51	458	34.34	997	74.83	335	25.17
Family Hhld w/o Child<18	9,653	6,075	62.93	2,130	22.06	3,923	40.64	6,763	70.06	2,890	29.94
Non-family Households	6,211	2,230	35.91	782	12.58	1,433	23.08	2,844	45.80	3,367	54.20
<b>EMPLOYMENT OF HOUSEHOLDER</b>											
Employed	14,528	9,818	67.58	3,052	21.00	6,727	46.30	11,658	80.24	2,870	19.76
Unemployed	468	250	53.39	75	16.02	175	37.37	321	68.54	147	31.46
Not in Labor Force	8,398	3,578	42.61	1,387	16.52	2,170	25.84	3,985	47.45	4,413	52.55
<b>REGION</b>											
Northeast	3,399	2,287	67.28	632	18.60	1,635	48.11	2,540	74.72	859	25.28
Midwest	6,253	3,764	60.20	1,374	21.98	2,379	38.04	4,477	71.60	1,776	28.40
South	10,861	5,677	52.27	1,976	18.20	3,682	33.90	6,788	62.50	4,073	37.50
West	2,882	1,918	66.56	531	18.43	1,376	47.74	2,158	74.89	724	25.11

Rural		INTERNET USE								NO INTERNET USE	
(Numbers in Thousands)		IN THE HOME						ANYWHERE			
STATE	TOTAL HHHLS	TOTAL		DIAL-UP		BROADBAND					
		No.	%	No.	%	No.	%	No.	%	No.	%
Alabama	801	360	44.99	137	17.12	223	27.87	445	55.58	356	44.42
Alaska	95	65	68.35	11	11.36	54	56.99	79	83.02	16	16.98
Arizona	291	204	70.33	32	10.95	173	59.38	211	72.67	79	27.33
Arkansas	526	267	50.75	97	18.37	169	32.10	327	62.08	200	37.92
California	679	461	67.91	161	23.66	298	43.81	500	73.70	179	26.30
Colorado	193	153	79.47	37	19.11	116	60.36	168	86.92	25	13.08
Connecticut	162	120	74.52	19	11.59	102	62.92	134	82.74	28	17.26
Delaware	61	40	65.33	17	28.41	23	36.92	42	68.26	19	31.74
Washington, DC	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Florida	591	380	64.31	112	18.87	265	44.81	386	65.35	205	34.65
Georgia	943	555	58.82	107	11.36	447	47.46	653	69.25	290	30.75
Hawaii	29	18	63.04	2	7.46	16	55.59	22	76.95	7	23.05
Idaho	185	105	56.86	22	11.92	82	44.41	131	70.75	54	29.25
Illinois	509	329	64.54	153	29.97	176	34.57	377	73.92	133	26.08
Indiana	743	492	66.22	221	29.72	266	35.78	543	73.10	200	26.90
Iowa	439	267	60.77	86	19.67	181	41.10	325	73.90	115	26.10
Kansas	279	153	54.91	43	15.59	107	38.38	208	74.69	71	25.31
Kentucky	764	381	49.79	155	20.22	226	29.57	464	60.70	300	39.30
Louisiana	448	222	49.53	93	20.69	129	28.85	265	59.07	184	40.93
Maine	323	215	66.45	70	21.50	145	44.78	240	74.28	83	25.72
Maryland	256	167	65.20	46	18.02	119	46.58	183	71.41	73	28.59
Massachusetts	202	156	77.23	15	7.55	141	69.68	163	80.56	39	19.44
Michigan	983	606	61.69	245	24.95	358	36.47	734	74.66	249	25.34
Minnesota	506	328	64.70	110	21.70	218	43.00	396	78.28	110	21.72
Mississippi	664	282	42.49	113	17.03	167	25.09	375	56.51	289	43.49
Missouri	629	314	49.86	131	20.84	183	29.02	385	61.15	244	38.85
Montana	189	109	57.66	44	23.14	65	34.52	127	67.22	62	32.78
Nebraska	179	104	57.94	28	15.61	76	42.32	124	69.10	55	30.90
Nevada	44	31	69.29	9	20.72	21	48.57	34	76.37	10	23.63
New Hampshire	205	159	77.26	36	17.33	123	59.71	173	84.30	32	15.70
New Jersey	180	137	76.13	29	16.37	107	59.75	143	79.25	37	20.75
New Mexico	194	84	43.41	18	9.24	65	33.45	119	61.16	75	38.84
New York	951	635	66.81	166	17.44	464	48.77	724	76.14	227	23.86
North Carolina	1,379	707	51.28	166	12.04	541	39.24	863	62.63	515	37.37
North Dakota	109	59	54.09	16	14.56	43	39.25	74	67.60	35	32.40
Ohio	1,039	561	54.00	172	16.52	389	37.47	648	62.37	391	37.63
Oklahoma	480	228	47.41	98	20.45	128	26.58	288	60.06	192	39.94
Oregon	349	220	62.98	53	15.32	160	46.04	240	68.80	109	31.20
Pennsylvania	1,189	727	61.13	248	20.90	467	39.27	810	68.15	379	31.85
Rhode Island	35	29	84.28	5	13.72	24	70.56	30	85.40	5	14.60
South Carolina	669	356	53.24	136	20.30	218	32.68	450	67.31	219	32.69
South Dakota	148	84	56.57	31	20.80	52	35.33	106	71.42	42	28.58
Tennessee	788	364	46.11	152	19.29	211	26.82	434	55.03	354	44.97
Texas	1,322	732	55.34	248	18.72	484	36.62	883	66.78	439	33.22
Utah	155	112	72.61	28	18.20	84	54.41	125	81.06	29	18.94
Vermont	152	109	71.51	44	29.27	63	41.22	123	81.24	28	18.76
Virginia	751	438	58.30	212	28.23	221	29.45	494	65.81	257	34.19
Washington	390	302	77.27	102	26.22	199	51.04	334	85.56	56	14.44
West Virginia	418	200	47.87	89	21.22	110	26.41	236	56.53	182	43.47
Wisconsin	689	469	68.02	138	20.10	330	47.92	559	81.08	130	18.92
Wyoming	91	54	59.93	12	13.35	42	46.34	69	76.35	21	23.65

Households using the Internet in and outside the home, by selected characteristics: Total, Urban, Rural, Principal City, 2007

Principal City		INTERNET USE								NO INTERNET USE	
(Numbers in Thousands)		IN THE HOME						ANYWHERE			
TOTAL HHLDS		TOTAL		DIAL-UP		BROADBAND					
		No.	%	No.	%	No.	%	No.	%	No.	%
Total Householders	39,501	23,274	58.92	3,028	7.67	20,143	50.99	27,268	69.03	12,233	30.97
<b>FAMILY INCOME OF HOUSEHOLDER</b>											
Under \$5,000	1,259	434	34.44	58	4.57	376	29.87	627	49.78	632	50.22
5,000-9,999	1,994	472	23.66	77	3.86	391	19.59	721	36.13	1,274	63.87
10,000-14,999	2,582	688	26.64	110	4.27	577	22.36	1,019	39.45	1,564	60.55
15,000-19,999	1,849	658	35.62	133	7.20	523	28.30	893	48.32	956	51.68
20,000-24,999	2,144	875	40.82	180	8.38	695	32.43	1,138	53.09	1,006	46.91
25,000-34,999	4,184	2,144		325		1,813		2,778		1,406	33.60
35,000-49,999	4,646	3,044	65.51	439	9.45	2,592	55.79	3,649	78.53	997	21.47
50,000-74,999	5,203	4,203	80.78	510	9.81	3,665	70.44	4,656	89.48	547	10.52
75,000-99,999	2,800	2,506	89.51	205	7.31	2,279	81.41	2,648	94.56	152	5.44
100,000-149,999	2,277	2,122	93.21	155	6.80	1,957	85.96	2,196	96.45	81	3.55
150,000+	1,700	1,617	95.10	66	3.87	1,551	91.23	1,642	96.54	59	3.46
Not reported	8,861	4,510	50.89	771	8.70	3,722	42.00	5,302	59.83	3,560	40.17
<b>AGE OF HOUSEHOLDER</b>											
Under 25 years	3,195	1,882	58.91	137	4.27	1,740	54.45	2,374	74.28	822	25.72
25-34 years	8,061	5,299	65.74	416	5.16	4,843	60.08	6,302	78.18	1,759	21.82
35-44 years	7,618	5,139	67.45	603	7.92	4,522	59.36	6,026	79.10	1,592	20.90
45-54 years	7,552	4,897	64.83	704	9.33	4,177	55.31	5,657	74.90	1,896	25.10
55+ years	13,074	6,057	46.33	1,168	8.94	4,861	37.18	6,909	52.85	6,165	47.15
<b>RACE OF HOUSEHOLDER</b>											
White Non Hispanic	22,180	15,223	68.63	1,830	8.25	13,330	60.10	17,056	76.90	5,124	23.10
Black Non Hispanic	7,583	3,149	41.53	493	6.51	2,640	34.82	4,302	56.73	3,281	43.27
AI/AN Non Hispanic	157	86	55.00	22	13.72	62	39.24	105	67.03	52	32.97
Asian Non Hispanic	2,401	1,751	72.92	139	5.77	1,600	66.63	1,903	79.25	498	20.75
Hispanic	6,643	2,709	40.78	501	7.54	2,203	33.16	3,481	52.40	3,162	47.60
<b>GENDER OF HOUSEHOLDER</b>											
Male	19,188	12,146	63.30	1,398	7.28	10,704	55.78	13,834	72.10	5,353	27.90
Female	20,313	11,127	54.78	1,630	8.03	9,439	46.47	13,433	66.13	6,880	33.87
<b>EDUCATIONAL ATTAINMENT OF HOUSEHOLDER</b>											
Elementary: 0-8 years	2,323	405	17.45	107	4.61	298	12.84	600	25.82	1,723	74.18
Some H.S.: no diploma	3,391	886	26.12	171	5.06	697	20.55	1,283	37.84	2,108	62.16
H.S. Diploma/GED	10,243	4,467	43.61	810	7.91	3,641	35.55	5,599	54.66	4,645	45.34
Some College	10,688	6,869	64.27	918	8.59	5,916	55.35	8,244	77.13	2,444	22.87
Bachelors degree or more	12,856	10,646	82.81	1,021	7.94	9,590	74.60	11,543	89.79	1,313	10.21
<b>HOUSEHOLD TYPE</b>											
Mar Couple w/Child<18	7,316	5,432	74.25	669	9.14	4,753	64.96	6,009	82.14	1,307	17.86
Male Hhldr w/Child<18	977	457	46.75	46	4.66	411	42.09	617	63.19	360	36.81
Female Hhldr w/Child<18	4,047	1,985	49.06	277	6.85	1,696	41.92	2,755	68.09	1,291	31.91
Family Hhld w/o Child<18	10,899	7,072	64.88	989	9.08	6,058	55.58	7,790	71.48	3,109	28.52
Non-family Households	16,262	8,328	51.21	1,048	6.44	7,224	44.42	10,095	62.08	6,167	37.92
<b>EMPLOYMENT OF HOUSEHOLDER</b>											
Employed	25,690	17,544	68.29	1,948	7.58	15,513	60.38	20,516	79.86	5,174	20.14
Unemployed	1,278	734	57.46	98	7.64	637	49.82	937	73.35	341	26.65
Not in Labor Force	12,533	4,995	39.86	983	7.84	3,993	31.86	5,815	46.39	6,718	53.61
<b>REGION</b>											
Northeast	6,671	3,571	53.52	421	6.31	3,149	47.20	4,060	60.86	2,611	39.14
Midwest	7,831	4,504	57.51	626	7.99	3,858	49.26	5,502	70.26	2,329	29.74
South	13,325	7,679	57.63	975	7.32	6,673	50.08	9,084	68.17	4,241	31.83
West	11,673	7,520	64.42	1,006	8.62	6,463	55.36	8,621	73.86	3,052	26.14

Principal City (Numbers in Thousands)		INTERNET USE								NO INTERNET USE	
		IN THE HOME						ANYWHERE			
TOTAL HHLDS		TOTAL		DIAL-UP		BROADBAND					
STATE		No.	%	No.	%	No.	%	No.	%	No.	%
Alabama	503	273	54.22	34	6.77	239	47.46	322	63.87	182	36.13
Alaska	110	85	77.60	12	10.48	73	66.16	93	84.56	17	15.44
Arizona	1,245	764	61.35	101	8.14	655	52.62	885	71.09	360	28.91
Arkansas	314	147	46.89	11	3.58	134	42.64	172	54.75	142	45.25
California	6,487	4,186	64.53	522	8.04	3,643	56.16	4,746	73.16	1,741	26.84
Colorado	855	515	60.29	86	10.01	428	50.09	620	72.50	235	27.50
Connecticut	406	230	56.72	19	4.79	211	51.94	270	66.55	136	33.45
Delaware	37	24	64.14	6	15.10	18	46.85	28	74.08	10	25.92
Washington, DC	276	163	58.94	18	6.64	144	51.97	207	74.70	70	25.30
Florida	2,104	1,369	65.08	191	9.08	1,168	55.52	1,487	70.66	617	29.34
Georgia	717	385	53.67	41	5.73	340	47.49	479	66.85	238	33.15
Hawaii	155	104	66.97	8	5.12	95	61.44	115	74.01	40	25.99
Idaho	171	111	64.89	21	12.10	90	52.79	122	71.68	48	28.32
Illinois	1,789	1,035	57.87	146	8.17	882	49.33	1,232	68.88	557	31.12
Indiana	771	372	48.29	64	8.33	308	39.97	488	63.35	283	36.65
Iowa	396	250	63.20	54	13.61	195	49.31	285	72.06	111	27.94
Kansas	381	245	64.18	20	5.35	223	58.47	293	77.01	88	22.99
Kentucky	308	193	62.78	22	7.12	171	55.67	223	72.53	85	27.47
Louisiana	609	317	52.09	48	7.81	269	44.27	374	61.51	234	38.49
Maine	79	45	56.47	5	6.63	39	49.84	56	70.82	23	29.18
Maryland	432	249	57.64	40	9.18	207	47.91	301	69.62	131	30.38
Massachusetts	650	381	58.69	43	6.67	338	52.02	428	65.82	222	34.18
Michigan	1,036	539	52.06	83	8.04	453	43.74	681	65.73	355	34.27
Minnesota	553	356	64.46	75	13.52	280	50.58	431	78.05	121	21.95
Mississippi	111	46	41.41	2	1.60	44	39.81	73	65.76	38	34.24
Missouri	604	345	57.10	46	7.69	295	48.92	418	69.30	185	30.70
Montana	98	56	57.12	11	11.37	45	45.75	69	71.16	28	28.84
Nebraska	292	195	66.70	17	5.99	176	60.46	227	77.76	65	22.24
Nevada	553	360	65.03	56	10.15	301	54.42	407	73.57	146	26.43
New Hampshire	82	56	67.96	4	5.17	51	62.79	60	72.72	22	27.28
New Jersey	346	162	46.94	34	9.77	129	37.16	194	55.96	152	44.04
New Mexico	321	199	61.92	37	11.54	160	49.95	234	73.05	86	26.95
New York	3,909	2,118	54.18	222	5.68	1,896	48.50	2,366	60.54	1,543	39.46
North Carolina	1,175	762	64.86	96	8.20	658	55.98	908	77.23	268	22.77
North Dakota	95	64	67.48	5	5.69	58	61.79	77	81.13	18	18.87
Ohio	1,068	549	51.40	54	5.08	495	46.31	715	66.90	354	33.10
Oklahoma	443	244	55.11	43	9.72	199	44.90	282	63.80	160	36.20
Oregon	493	359	72.74	52	10.50	307	62.23	408	82.80	85	17.20
Pennsylvania	1,047	484	46.25	85	8.14	399	38.11	579	55.28	468	44.72
Rhode Island	126	74	58.87	6	4.81	68	54.06	86	68.60	39	31.40
South Carolina	200	95	47.32	19	9.61	76	37.70	126	63.04	74	36.96
South Dakota	97	64	66.37	4	4.51	60	61.86	74	75.83	23	24.17
Tennessee	938	480	51.16	54	5.73	426	45.43	619	65.99	319	34.01
Texas	4,226	2,324	55.01	283	6.71	2,041	48.30	2,788	65.97	1,438	34.03
Utah	231	153	66.08	12	5.06	141	61.02	188	81.46	43	18.54
Vermont	26	20	75.34	1	5.17	18	67.66	22	81.69	5	18.31
Virginia	833	551	66.16	59	7.08	492	59.08	635	76.17	199	23.83
Washington	909	601	66.15	86	9.41	500	55.04	700	76.97	209	23.03
West Virginia	98	56	56.74	8	8.27	46	47.31	61	62.49	37	37.51
Wisconsin	751	489	65.21	55	7.34	432	57.52	580	77.32	170	22.68
Wyoming	46	28	61.11	4	8.87	24	52.25	33	72.71	13	27.29

Data from the Current Population Survey (October 2007), U.S. Census Bureau